Engagement, Disengagement and Non-Engagement with Sustainable Healthcare:

An exploratory sequential design

By

Chloe Griggs

Canterbury Christ Church University

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Abstract

Climate change is a pressing global problem requiring action at all levels within society. Healthcare organisations in the United Kingdom (UK) are under increasing pressure to reduce carbon emissions. Healthcare staff often work in challenging conditions with sick patients and limited resources, as a result climate change and sustainability are often a low priority. This portfolio presents research which examines the engagement of staff with the sustainable healthcare agenda, placing emphasis on the psychological perspectives that influence engagement, disengagement and non-engagement.

Chapter 1 introduces the subject, framing the impact of healthcare on climate change and health. This chapter provides an overview of the theoretical context and the significant theories and frameworks that influenced the research. A justification for the methodological and epistemological stance is provided. Chapter 2 presents a literature review on healthcare professional's perspectives on climate change and sustainable healthcare. The review revealed a scarcity of primary research, and of the nine research papers found there was evidence of situational constraints and psychological barriers to engagement. Chapter 3 sought to examine the findings from the literature amongst a sample of healthcare workers within the UK. This small qualitative study gathered the perspectives of 15 participants from a range of healthcare roles. The findings confirmed the presence of situational constraints and psychological barriers to engagement, thus confirming the findings of the literature review. The findings also revealed a willingness amongst participants to do more to mitigate climate change, however they wanted more education and knowledge on how to do this.

Chapter 4 explored the factors (values, beliefs and norms) that influenced engagement with a sustainable healthcare campaign. This large quantitative study gathered responses via an online questionnaire from 182 participants working in clinical and non-clinical roles across a community NHS trust. The findings revealed that value type (altruistic, biospheric or egoistic) can predict pro-environmental behaviours, and this is mediated by a person's beliefs and norms. The results showed that low-cost behaviours were easier to predict and the higher the cost the less predictive influence value type has over behaviours.

Chapter 5 examined those who had chosen not to engage with the sustainable healthcare campaign. The same community NHS trust was used but this time participants who had not engaged were approached. The aim was to understand the reasons for non-engagement. A case study design was utilised, and two participants were included, each presenting different reasons for non-engagement. The findings suggested that non-engagement is complex and multi-faceted but was not automatically an indicator of disengagement.

Chapter 6 examines the findings from each piece of research within this portfolio and provides an overarching commentary and synthesis. The limitations are acknowledged and from this the key theoretical, practical and research implications are drawn out and recommendations made. This final chapter has a reflective element which examines the successes and limitations of the methodological approaches used, along with a reflection on the impact this research has had on me.

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Chapter 1

Introduction and Overview of Portfolio

Introduction

The research presented in this portfolio focused on the psychological perspectives of staff working within the United Kingdom healthcare system towards the concept of *sustainable healthcare.* Sustainable healthcare is defined by Shroeder, Thompson, Frith and Pencheon (2013, p. 76) as "a way of providing care that is living and working within our means with regard to natural resources at its core. It is healthcare that avoids putting detrimental stress on environmental and human systems which not only endanger the health of the current global population but also negatively affect the health and wellbeing of generations in the future".

Of particular interest was the level of engagement, disengagement and non-engagement by staff with the concept of sustainable healthcare. *Engagement* can be defined as the state or quality of being dedicated to a cause or activity, within this research it is the state of being engaged with sustainable healthcare. *Disengagement* is described as the act or process of disengaging or the state of being morally disengaged whereby psychological strategies are used to disassociate oneself from the act or process. Finally, *non-engagement* is defined as the failure to engage or participate in the pursuits or actions of a group or in this context a sustainable healthcare campaign (Oxford English Dictionary, 2020).

Chapter one introduces the portfolio and addresses my personal journey in the lead up to commencing this research. This chapter sets the theoretical context, the socio-political context and the methodological and epistemological context to allow the reader to understand the external sources of influence present during the research and to position this research within the field of environmental psychology and healthcare. This introductory chapter provides an insight into the

size and environmental impact of the National Health Service (NHS) within the United Kingdom (UK). Chapters two through to five presents each of phase of research. Finally, chapter six aims to address the over-arching methodological implications, the practice impact, and the theoretical contribution. It provides narrative around my personal journey as a researcher along with the limitations and recommendations.

Background

A personal journey into sustainable healthcare

A series of life events in 2014 and 2015 led me to become more interested and attuned to the concept of climate change and sustainable healthcare. I began to pay closer attention to environmental issues and as a nurse I started to comprehend the damage that healthcare was having upon not only the environment but also the health and wellbeing of people around the world. During the 18 months preceding the start of this research I spent time reading and reflecting upon the topic of sustainable healthcare and began to build a basic appreciation of what was known about the subject.

As a nurse I had always imagined that I would use an *action research* methodology. As someone who enjoys applied learning through seeing, doing, implementing and evaluating the solution-focused action research methodology (Stringer, 2013) appealed to me. However, the more I read and the more time I spent trying to search for information the more aware I became of the serious absence of literature within the field of nursing and sustainable healthcare. In fact, there was very little research on sustainable healthcare in general. At this point I realised that an action research project would not be possible. With little understanding of a topic there needed to be some baseline data gathered, something to provide an understanding of current practices and also the attitudes and beliefs towards those practices. Without such a foundation of knowledge it would be difficult for any future researcher to implement change. It was from this realisation that I embarked on this research with the knowledge that I would be making an original contribution where there was very little existing literature.

Around the time I started this research, the concept of sustainable healthcare was poorly understood by a majority of UK healthcare staff (McMillan, 2014). Sustainable healthcare tended to be understood and enacted by a very small group of people. These people tended to be in either estates or infrastructure roles, and therefore concerned with the carbon footprint of the organisation, or in centralised roles linked to the NHS Sustainable Development Unit. From a frontline clinical perspective, the term sustainable healthcare was often used in relation to money and service longevity and not in relation to environmental impacts (Scheirer and Dearing, 2011). It was also a time when many large healthcare organizations were setting up dedicated teams to develop and implement carbon reduction strategies (Sustainable Development Unit, 2016). Naturally, a good place for organisations to start was by looking at the physical estate and how buildings could be modified to improve energy efficiency and saving (Griffiths, 2006). This may have compounded the notion that sustainable healthcare was an issue for estates and infrastructure staff and not something that clinical staff needed to think about.

From estates and infrastructure, the sustainable healthcare agenda developed into sectors such as procurement, catering, and hospital transport. These agendas became campaigns which sought to raise awareness of the work that the NHS was doing to reduce carbon emissions. Many organizations were able to implement innovative and forward-thinking strategies such as St Barts Health NHS (Beavis, 2016). However, it became evident that even with the greenest buildings and the most ethical procurement, if the staff were not responsible in using resources then the system would be undermined. Carbon savings made through energy efficient buildings may be lost if windows were left open and lights left on. Therefore, the staff and the people inhabiting the UK healthcare sector and their attitudes and beliefs became a central focus for many UK healthcare providers and represented one of the biggest challenges to sustainable healthcare.

As a nurse I was partially aware of the barriers to sustainable healthcare. I was able to reflect on my own experience of the daily challenges of working in a clinical environment to know that an ageing and sick population placing demands on a system subject to austerity measures would likely mean sustainable healthcare was low on the list of priorities (Kagasniemi, Kallio and Pietillä, 2014). It seemed likely that these physical barriers would never go away but little was known about the attitudes, beliefs and values, and how these affected everyday decisions and use of resources.

At the time, I found it difficult to comprehend the absence of research. The UK had a Sustainable Development Unit (2016) jointly funded by the NHS and Public Health England, making recommendations for change, yet there was very little empirical evidence that addressed the psychology of the staff and their understanding or attitude towards the topic. The Unit had written many reports but they did not contain empirical research and were not published within peer reviewed journals. At this stage it became apparent that there were many authors publishing commentaries, opinion pieces and news (Goodman, 2016; Anderko, Schenk, Huffling and Chalupka, 2017) but there was a lack of primary research.

My personal research journey became clear. Emphasis needed to be placed on engaging those working in healthcare. I identified a need to explore the staff and their psychological perspectives, and to give the field of sustainable healthcare a much-needed baseline from which researchers could build upon. I realised that this research needed to be exploratory and iterative, it would not be possible to map out each stage in advance. The research stages needed to be informed by the previous stage, thereby constructing a meaningful whole. The research for me took on a new meaning, as I was not only driven by my own desire to become a scholar in the field, but it felt like there was an added moral incentive, a moral imperative to the whole project. The next

section will provide an overview of the NHS as an organisation and the challenges posed by sustainable healthcare.

The NHS

The NHS is the largest employer in England and one of the largest in the world (Kings Fund, 2019). The population in England is 56 million (Office for National Statistics, 2020) and the NHS employs around 1.3 million people (Kings Fund, 2019) which is more than 2% of the population in England. It delivers care, free at point of access, via 223 NHS trusts across the Country (Kings Fund, 2019). The Department for Health and Social Care spent £130.3 billion in 2018-19, representing 9.8% of gross domestic product (Kings Fund, 2019). According to NHS England (2020a) health care is believed to be responsible for 4-5% of the gross carbon emissions in the UK, with air quality posing one of the most serious threats to health.

The demand for healthcare in England is rising exponentially by around 4% each year, this is due to an ageing population over the age of 85 and the increasing prevalence of long-term conditions (NHS Providers, 2020). The funding for the NHS is not keeping pace and there is a growing sense of urgency to develop sustainable healthcare. According to the Sustainable Development Unit (2020a) there are three areas that feed into sustainable healthcare: the first is the need to 'green' the sector via energy, travel and waste; the second is to 'green' the care that is delivered by creating lean pathways of care that optimise resources; and finally the third area is to 'green' our way of living right from lifestyle choices through to education and industry.

The greening of care delivery and the creation of lean pathways of care poses an interesting and significant challenge to the NHS as this requires the engagement and cooperation of staff at

all levels (NHS England 2020b). Staff engagement with sustainable healthcare in the NHS is inconsistent, for example it is promoted on the webpages for the new strategy *For a Greener NHS* (NHS England 2020a) yet in the guidance document for creating a 'Green Plan' the focus is on senior management in the development of the plan (Sustainable Development Unit, 2020) with little engagement of people on the frontline.

Within the NHS there is a growing need to understand the psychological aspects of climate change mitigation and adaptation. Swim et al. (2011) suggest that one of the most valuable contributions that psychology can make to addressing climate change is to facilitate an understanding of people's values, beliefs and norms and how these inform decisions about pro-environmental actions and behaviours. The next section will set the theoretical context and illustrate some of the macro, meso and micro psychological perspectives that have been guiding this research. The macro theoretical perspectives are at the global level and often span disciplines, the meso theoretical perspectives are at the mid-level and discipline specific, and the micro theoretical perspectives are the theories applied within this research.

Theoretical Context

Macro Theoretical Context

This research is approached from an *environmental psychology* perspective, defined by Scott, Amel, Koger and Manning (2016 p. 97) as "an interdisciplinary, scientific field that examines human interaction with the physical environment". Stemming from the seminal work of Kenneth Craik in the early 1970s, environmental psychology illuminates the contribution that psychology may make to the current environmental crisis (Craik, 1970). Clayton et al. (2015) recognises that humans do not always maximise climate change mitigation strategies and quite often impede progress. Psychology alone cannot halt the deterioration of the climate, but it can help to explain why some people engage with pro-environmental behaviours while others do not (Sörqvist, 2016). This is supported by Stern (2011) who proffers that environmental psychology is best combined with other disciplines through collaboration to embed psychological insight into other fields.

Scott et al. (2016) document that since the 1960s significant time and energy has been spent attempting to generate pro-environmental societal change, much of this was led by politicians, environmentalists, educators and lay people. It is only more recently that the experts on human behaviour, the psychologists, have been more actively engaged with the topic (Gifford, 2011). Psychology offers an extensive body of knowledge, illustrating that the crisis with the environment is a crisis of human behaviour (Scott et al., 2016) and that everything we know about human thinking, motivation and social interactions can be applied to the environmental crisis. Stokols (1978) highlighted the importance of individual psychological theories of cognitive development,

personality and interpersonal processes, but also identified the strength of social and cultural mediators that affect behaviour.

An important theoretical element of environmental psychology is the *human interdependence paradigm* (Gärling, Biel and Gustafsson, 2002). Central to this paradigm is the notion that individual decisions have consequences for others, therefore we are intrinsically linked by our actions to one another. Individual decisions are often marred by uncertainty about the future, for example the severity of climate change and the precise point at which the effects may be felt locally. This means that human decision making is reliant on a process of evaluation of outcomes and attempts to predict the occurrence of outcomes (Hogarth, 1987). Conceptually, and spatially it is often difficult to make such evaluations and predictions, and as a result, decisions are often based on self-interest at that time (Gärling et al., 2002). This paradigm is closely linked to the *social dilemmas theory* whereby group or collective interest relies on group cooperation (Hardin, 1968). This theory posits that a *critical mass* is needed, whereby enough people act for the collective good to make the outcome meaningful and significant. Failure to engage a critical mass will result in negative consequences for all (Hardin, 1968).

A further important theoretical element of environmental psychology is the concept of ethics and morals. Environmental ethics can be defined as "the study of ethical relationships between human beings and the natural environment, including the nonhuman individuals that populate/constitute it" (Cafaro and Primack, 2013, p. 760). Historically, the notion of *anthropocentrism* in western society has been driven by the belief that humans are superior and have the right to control everything else (White, 1967). Palmer, McShane and Sandler (2014) state that most of the environmental issues we have today are due to anthropocentric views but since the 1980s there has been a growing shift in morality towards non-anthropocentrism (or eco-

centrism) and the notion that all things are equal and that humans do not have the right or supremacy over the non-human environment (Taylor, 1987).

Much of our interaction with the environment is shaped by morals about the environment and what constitutes right and wrong (Sandler, 2013). For example, the notion that we ought to reduce our ecological footprint will be shaped by our morals, and our multifaceted morals in turn may be informed by things like: the availability of good data; our interpretation of the data; our belief that the environment holds intrinsic value and is not simply a commodity; and the impact of action on our own lives and that of others (Palmer et al., 2014).

The extent to which our morals are activated will determine the subsequent behaviour. If someone's morals are activated then they may be morally engaged, for example moral engagement with sustainable healthcare suggests that someone has concern for the environment and is willing to take actions to reduce their ecological footprint (Heald, 2018). In contrast, moral disengagement may be a state by which morals are not activated, indicating that an individual may not be concerned for the environment and therefore does not believe that pro-environmental behaviours and standards apply to them (Woods, Coen and Fernandez, 2018).

Meso Theoretical Context

Gifford, Steg and Reser (2011) suggest that there are seven main theoretical models which guide environmental psychologists, many of these focus on specific issues (for example, stimulation or control). One of the models created by Stokols (1978) sought to capture the complexity of humans and their interaction with the environment. As a result, Stokols (1978) created a theoretical framework with four *forms of human transaction with the environment* which

served as a basis for conceptualising the major areas of environmental psychology (Table 1). The first *interpretive* phase is associated with an individual's perception of their environment, this is an active-cognitive phase. The second *evaluative* phase is associated with environmental attitudes, values and risks, this is a reactive-cognitive phase. The third *operative* phase is associated with environmental behaviours and an individual's own impact on the environment, this is an active-behavioural phase. Finally, the *responsive* phase is associated with the impact of the environment on the behaviour and wellbeing of the individual, this is a reactive-behavioural phase.

Giuliani and Scopelliti (2009) recommend the use of this theoretical framework to maintain some sense of order within the field of environmental psychology. This research explores phases one to three as it examines factors that affect engagement, disengagement and non-engagement with sustainable healthcare. Stokol (1978) provides an over-arching framework which helps to place this research within the field, to help identify the contribution this research makes to the respective phases. However, it is necessary to delve deeper into the micro theoretical context within each of the subsequent phases.

Table 1

Forms of Transaction (adapted from Stokols, 1978)

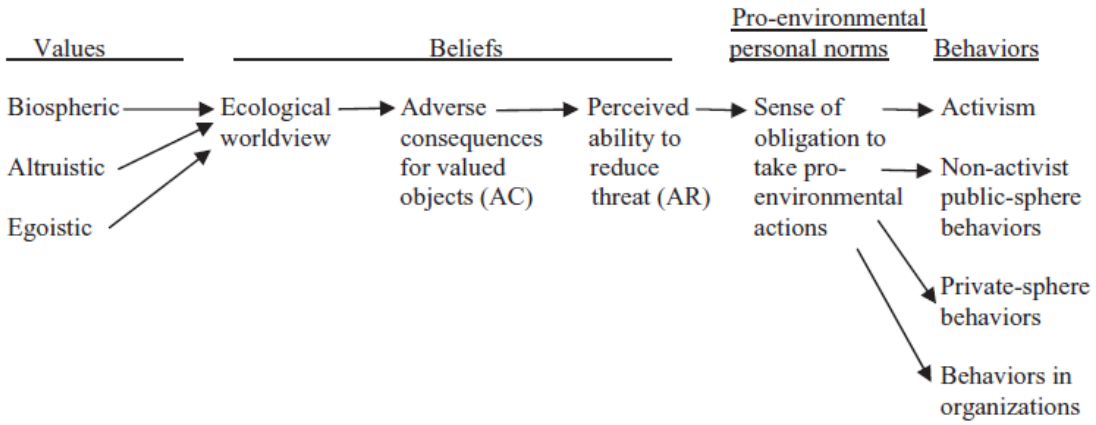
		Cognitive	**Behavioural**
Phase of Transaction	**Active**	**Interpretive** Cognitive representation of the environment	**Operative** Movement through or indirect impact on the environment
	Reactive	**Evaluative** Evaluation of the situation against pre- defined standards of quality.	**Responsive** The environmental effects on the individual's behaviour and wellbeing.

Micro Theoretical Context

The *Values-Beliefs-Norms (VBN) Theory of Environmentalism* (Stern, 2000) offers a simple and validated conceptual framework which assists researchers and psychologists to understand the determinants of pro-environmental behaviour. Stern (2000) proposes that in a causal chain an individual's value type, combined with their personal beliefs, along with their personal and social norms will influence their predisposition to behave pro-environmentally (Figure 1). The VBN theory has been used extensively since its inception in the 1990s (Steg, Driejerink and Abrahamse 2005; Kaiser, Hubner and Bogner, 2005; Choi, Jang, Kandampully 2015) and is now considered to be a fundamental theory in the field of environmental psychology (Gifford, 2014).

Figure 1

Values-Beliefs-Norms Theory of Environmentalism



Values are described by Stern and Dietz (1994) as a set of rules about how the world operates and our place within it, they remain stable, but an individual may have several different values orientations depending on the context or social structure. Values within this context are grouped into three types: egoistic, altruistic and biospheric (Stern, Dietz and Kalof, 1993). The egoistic value type is less likely to be associated with pro-environmental behaviour as this value type is aligned with self-interest and gains, wealth and power. The altruistic value type is socially orientated, caring for those around them and humanity. The biospheric value type is ecologically orientated and most likely to be associated with pro-environmental behaviour, believing that all life is equal (Stern and Dietz, 1994).

Beliefs within the VBN theory are grounded within an individual's worldview, their connectedness to the planet and their general concern for the environment. An individual who has a pro-environmental worldview is more likely to engage with pro-environmental behaviours. This is also informed by an individual's awareness of the consequences of action or inaction, and their ability to ascribe personal responsibility for action. The beliefs element of the VBN theory has strong connections to the *theory of planned behaviour* (Ajzen, 1991) where an individual will hold beliefs based on their perceived behavioural control over the situation.

Norms within the VBN theory are linked to an individual's personal norms and perceived societal norms. Personal norms may refer to daily actions that are enacted to comply with underlying values and beliefs, for example, making a choice to use biodegradable detergent and cleaning agents free from toxins. Societal norms refer to the laws and rules that society set and by which individuals comply, for example, kerbside recycling is dictated by local authorities and most households are compliant (Gärling et al., 2002). Personal norms have a grounding in *self-determination theory* (Deci and Ryan, 1985) which examines motivation and levels of self-

determination. An individual who is highly self-motivated is likely to have an intrinsic sense of motivation, set by their own personal standards of what they believe is right or wrong. In contrast, an individual who is not self-motivated may be reliant on external sources for direction and as such, societal norms are a significant source of influence (Deci and Ryan, 1985).

Behaviours within the VBN theory (Stern, 2000) are broken down to establish the extent to which an individual may enacting pro-environmental behaviours: *environmental activism*; *non-activist behaviour in the public-sphere*; *private-sphere environmentalism*; and, *behaviour within organisations*. Environmental activism is demonstrated on an individual level and depicted by dedicated environmental action. Non-activist behaviour in the public sphere depicts people who support public policy by pro-environmental voting or acting out pro-environmental rules set out by government. Private-sphere environmentalism is the decision making that people make regarding their own consumer habits. Finally, behaviours within organisations are when key individuals influence the way that the organisation operates. For example, pro-environmental decisions linked to manufacturing processes, can have a direct and positive impact upstream.

Socio-Political Context

During the research there were several global events that have altered the course of sustainable healthcare and pro-environmental behaviour. Salleh (2013) documented the influence of global politics on research, and the effect that government narratives can have on public perceptions of a topic such as climate change. Therefore, it is important to explore the potential impact of two major political changes that occurred during this research. The first was the UK's vote to leave the European Union (EU), known as Brexit; and the second was the election of republican Donald Trump as president of the United States (US).

The vote to leave the EU was significant for several reasons but one of which was the impact this may have on carbon reduction targets as several UK policies have been developed within an EU context. However, in their briefing note on the implications of Brexit on carbon budgets, the Committee on Climate Change (2016) stated that the UK's climate goals had not changed, and while UK policy would need to be rewritten, many of the EU objectives could be preserved and strengthened.

The election of Donald Trump as US president posed a more serious and unknown risk. Trump famously described climate change as a "hoax created by the Chinese to reduce the competitiveness of American manufacturing" (McKee, Greer and Stuckler, 2017, p. 1), and is well known for his overt statements on Twitter denying climate change (Schulman, 2017). Since winning the US presidential election his views towards climate change have been inconsistent but overall the outlook was not promising as he rejected the *Paris Agreement* (Faulkner, 2017) and nominated Scott Pruitt, a known climate change sceptic, as head of the *US Environmental*

Protection Agency (Milman, 2017). The risks associated with overt expressions of climate change denial from people in such positions of power was the influence it may have over those who are undecided or uninformed. The *New Scientist* called for rationalism and cautioned against what they referred to as the *anti-science* administration (Grossman, 2017), and with environmental research budgets being cut the ramifications and the air of uncertainty extended far beyond US shores (Whyte, 2017).

Nothing can be done about the global political events that were occurring during this research, and it would be difficult to assess the impact this may have had on participants. The general uncertainty around Brexit may have heightened anxieties around climate change and The Prince's Trust (2017) *Macquarie Youth Index 2017* suggested that young people felt anxious about the political world events of 2016-17. Similarly, the Mental Health Foundation (2017) surveyed 1700 UK adults, of which 49% reported anxiety specifically in relation to the inauguration of Donald Trump as US president. It is therefore important to acknowledge and document these global political events to contextualise the tensions faced by people in the UK at the time of data collection.

The rise of Greta Thunberg, a Swedish schoolgirl also occurred during this research and represents a significant societal shift in support from the younger generation towards climate change activism. Greta Thunberg started a climate change movement at the age of 15, her two-week strike from school to sit outside the Swedish parliament caught the attention of global media and she quickly gained millions of supporters across the world (France-Presse, 2020). In March 2019 in more than 2000 locations around the world more than 1.5 million people joined her for a climate strike (350.org, 2019). This abstract passive resistance (Holmberg and Alvinius, 2019) was unique because historically children have been denied the right to exercise political agency due to

a perceived lack of maturity and knowledge. However, in this instance children were able to demonstrate a legitimate expression of their autonomy and challenge global politicians and world leaders (Holmberg and Alvinius, 2019).

In addition to the political events there was the 2020 global COVID-19 pandemic. The full effects have not yet been quantified but because of the need for extensive personal-protective equipment estimates from the US suggest that single use plastics increased by 250-300% (The Economist, 2020), and likely to be a similar picture in the UK. At a time when sustainable healthcare campaigns were making progress in reducing the carbon footprint of many large organisations, the pandemic has represented a serious backward step in the consumption of single-use items. This has extended far beyond healthcare to members of the public as use of face masks on public transport is mandatory and a new tide of 129 billion face masks and 65 billion gloves per month are being disposed of, many of which are being found on beaches and in the countryside (BBC, 2020). In contrast, the global reduction in carbon emissions has been one positive effect to emerge from the crisis, with the Carbon Brief (Evans, 2020) documenting an 8% reduction in carbon emissions representing around 2,800mt of CO_2. The benefits of less transportation noise and pollution, improved wellbeing through access to open spaces, and a slower pace of life have all been documented (Howarth et al., 2020). In addition, the Prime Minister set out a 'green recovery' for the UK to avoid a rebound to the pre- COVID-19 CO_2 levels (Simkins, 2020), and Howarth et al. (2020) call for a social mandate to forge a post-COVID-19 response.

The 1st October 2020 was the launch of NHS NET ZERO, a pledge by the UK government to decarbonise all aspects of the NHS and be net zero by 2050 (NHS England and NHS Improvement, 2020). This report potently captures the need for change within the NHS, stating that "the climate emergency is a health emergency" (NHS England and NHS Improvement, 2020,

p. 7). The effects of climate change are no longer things that we read about in the media, affecting anonymous people in faraway countries. The effects of climate change are being witness here in the UK and the net zero report embodies a sense of urgency.

Methodological and Epistemological Context

The traditional research paradigm of positivism was developed in the natural sciences around 400 BC with the work of Plato and Socrates who believed in absolutism, deductive logic and that the truth is unchanging (Johnson and Gray, 2010). Around the same time as Plato and Socrates the work of relativist Protagoras suggested that man and his subjective interpretations of reality should bear equal consideration, and that the real world only carried meaning when interpreted by the human mind (Johnson and Gray, 2010). This constructivist viewpoint as it is known today is interested in the construction of meaningful reality, and that truth or meaning is not discovered but in fact constructed by those who apply interpretation and consciousness to a phenomenon (Crotty, 1998).

Until recently there has been a strong belief that these two opposing paradigms or *world views* cannot be mixed, researchers exploring the world and its objects had to choose a paradigm and stick with it. This point of view according to Tashakkori and Teddlie (1998, p. 4) is known as the "incompatibility thesis". However, in more recent years there is a growing body of knowledge (Morgan, 2008) that advocates a far more pragmatic approach to research. According to Tashakkori and Teddlie (1998) the research paradigm should be informed by the question or problem under investigation. Pragmatists suggest that traditional paradigms that were once kept separate can in fact be used together, as complimentary means of investigating a topic, and is the approach taken within this research.

The exploratory sequential design (ESD) is well suited to research where there is little guiding framework or sparse theory in existence (Creswell and Plano-Clark, 2011). The process is

iterative, allowing the research design to evolve in a dynamic and organic manner, with subsequent phase design being informed by the emergent theory (Natasi, Hitchcock and Brown, 2010). Typically, the first phase of an ESD is exploratory and qualitative in nature and both the literature review and the small-scale research project were the ideal means to gather such exploratory data. The aim of the literature review was to examine the published literature on perceptions of climate change and sustainable healthcare. This informed the small-scale research project which then explored perceptions of UK healthcare staff towards climate change and sustainable healthcare.

The second phase of an exploratory sequential design is often used to test or generalise the initial findings and the applied research project took the form of a large-scale quantitative phase (Creswell and Plano-Clark, 2011). The aim of this phase was to explore the factors (values, beliefs and norms) that have influenced engagement with a sustainable healthcare campaign. An additional qualitative phase was added in the form of a case study. The aims were to give voice to those who had chosen not to engage with the sustainable healthcare campaign and to explore the reasons for non-engagement. This additional qualitative phase was important to present a more balanced view of the topic rather than focussing solely on engagement.

The final interpretation phase is where all the findings are reviewed as a meaningful whole and an overarching synthesis and commentary is provided. The interpretation phase sought to synthesise the theoretical, practical and research contribution and implications. A mixed-method design incorporating both qualitative and quantitative elements such as this, is recommended as a methodology for complex research such as environmental psychology (Scott et al., 2016). The following section describes each of the research phases in more detail.

Portfolio Chapters

This portfolio presents the four research phases of an exploratory sequential design. The first phase called for a literature review which identified reasons for moral disengagement with climate change and sustainable healthcare. The second phase was a small qualitative study to see if the findings of the literature review were prevalent amongst a UK sample. The third phase was a large quantitative study within one community NHS trust examining engagement with a sustainable healthcare campaign. The fourth phase was a case study examining non-engagement with a sustainable healthcare campaign.

Literature Review

The literature review represented an opportunity to formally collate the existing research on the perspectives of healthcare staff towards sustainable healthcare. In total only nine papers were found during the search that met the inclusion criteria. These papers represented the total body of knowledge that examined the perceptions, beliefs and attitudes of healthcare staff towards climate change and sustainable healthcare. The literature review illuminated once again how few articles contained empirical research. In addition, the review highlighted how many authors discussed *sustainability* in terms of service longevity and budget, and a *climate of change* in terms of the changing landscape of healthcare.

The findings of the literature review highlighted many of the reasons for disengagement with sustainable healthcare. The disengagement varied in nature, ranging from situational constraints within the working environment (Dunphy, 2014), through to psychological barriers or

mental manoeuvres that people use to avoid action (Anåker, Nilsson, Holmner, and Elf, 2015). The discussion was able to draw commonality between the healthcare sector and the wider general population (Taylor, Dessai and Bruine de Bruin, 2014). The nine articles reviewed revealed moral disengagement as a significant barrier to sustainable healthcare. The literature review lay the foundations to present the published knowledge base, but further research was needed to examine if these themes were present amongst a UK sample. The findings of this literature review were published in the British Journal of Nursing (Griggs, Fernandez and Callanan, 2017). Please refer Appendix 17 and 18 in Chapter Six for a copy of published article.

Small-Scale Research Project

The small-scale research project was intended to provide a brief insight into the perceptions of UK healthcare sector staff towards climate change and sustainable healthcare. I wanted to explore if the findings of the literature review were present within a sample of the UK healthcare sector. This study consisted of a qualitative online questionnaire which gathered data from 15 participants. Most of the participants were nurses, however, there was also a range of other clinical and non-clinical participants, both male and female, and from a wide age range.

The findings indicated that most of the themes from the literature review were issues also experienced by the participants. Participants shared their own experiences of the situational constraints and contextual barriers and psychological barriers to sustainable healthcare. In addition to affirming the findings of the literature review, there were new themes that emerged. These new insights revealed a group of staff who were morally engaged with the topic of climate change and sustainable healthcare but unsure of what actions they could take. It illuminated the concept of

values and the altruistic value type of people who may be drawn to healthcare (Smith et al., 2013). It was these people who expressed concern for the climate but a lack of confidence in their knowledge and appropriate actions meant they were not yet compelled to act. This small qualitative study provided an interesting insight into a potentially 'untapped' group of workers and citizens, who want to act but await clear instruction and direction. This raised important questions about how they could be motivated to act and what kind of conditions need to be created to foster sustainable healthcare. Further research was needed to explore those who are engaging already with a sustainable healthcare campaign, this may shed light on the conditions needed to motivate people from non-engagement to engagement.

Applied Research Project

The applied research project was the third phase of this research and allowed exploration of the personal factors that may influence engagement with sustainable healthcare via behavioural spillover. This phase involved one community NHS trust that was leading the way with sustainable healthcare and a successful staff engagement campaign. The focus of this phase of research was on the personal psychological factors that may influence engagement, such as values, beliefs and norms.

Through mediation analysis this research demonstrated positive relationships between certain value types and private behaviours. In addition, there were beliefs that held predictive significance linking to certain behaviours. The findings of this phase illustrate some of the psychological conditions that needed to be fostered and promoted in the hope that behavioural spillover may occur between home and work. As a result, healthcare organisations can develop

campaigns, education programmes, publicity and initiatives that activate certain values, beliefs and norms.

In addition to the insights gained during this phase of the research around the ideal psychological conditions needed for people to engage, the research also revealed a small number of people who had chosen not to engage with the campaign. Upon further enquiry the campaign had only managed to engage about one quarter of all employed staff at the time, meaning three quarters had chosen not to engage. Further research was needed to explore the experiences of those who had chosen not to engage, and to examine if the non-engagement was through choice or through a disengagement with the topic.

Report on Professional Practice

The final phase of the exploratory sequential design was a small qualitative case study, intended to be a 'deep dive' into one or two cases of non-engagement with a sustainable healthcare campaign. As the research portfolio ended it seemed important to give a voice to those who had not engaged, and to explore if the non-engagement was a result of moral disengagement with the topic or simply a choice not to engage. Either way, it felt important to understand some of the contextual factors prohibiting engagement and to see if there were aspects of the campaign itself that was deterring people. The sample was taken from the same NHS community Trust that was used in the applied research project.

Participants were recruited based on their involvement in the previous quantitative element who had stated that they had not engaged with the campaign. Two participants agreed to take part in a qualitative interview to explore the reasons for their non-engagement and to review the

campaign website to gather their point of view. Both cases demonstrated a genuine concern for the environment therefore their non-engagement would not suggest moral disengagement. Reasons for non-engagement varied from one participant feeling that they did not have the time or energy to voluntarily engage, through to the other participant feeling as though they are already living a pro-environmental lifestyle. Some aspects of the campaign were criticised for presenting actions or behaviours that are normalised (for example use of re-usable carrier bags and recycling which have already become commonplace in the UK). Awareness of the campaign amongst staff was variable and reliance on engagement through good-will alone may not be enough, therefore integration of sustainable healthcare into job roles and greater face-to-face engagement may be needed.

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Chapter 2

A review of the literature:

Healthcare Professional's perceptions of climate change and sustainable healthcare

Abstract

Introduction

There is now strong evidence to suggest that global warming and the subsequent climate change has been accelerated by human activity. The physical effects of climate change are now being witnessed around the world and scientists and scholars are documenting the adverse effect that it is having on human health. The National Health Service is the largest carbon emitter in the United Kingdom and there is an increasing sense of urgency to understand how healthcare can reduce its carbon footprint. It is recognised that staff who work within the UK health service may play a significant role in carbon reduction strategies therefore the aim of this literature review was to examine the literature on perceptions of sustainability.

Method

This literature review obtained articles from searches within the Cumulative Nursing and Allied Health Library, the British Nursing Index, the Applied Social Sciences Index and Abstracts, and Medline. A total of nine primary research articles were included that examined clinical staff perceptions of climate change, sustainability and health. Articles were taken from Australia, Canada, Sweden, the United States and the United Kingdom. The articles were subject to a thematic analysis.

Results

Six themes emerged from the analysis: confusion around the term sustainability; lack of openness to see the impact that local actions were having on global issues; a feeling of futility and helplessness resulting in people taking no action at all; the desire to conform to social norms and

to avoid the topic of climate change; difficulties in balancing the needs of the planet while trying to manage daily work / life pressures; and, the complex psychology of self-exoneration.

Discussion

This review revealed a plethora of barriers to engagement with sustainable healthcare. There were physical, immovable and contextual barriers, but there were also psychological barriers. The psychological barriers are of interest as they may represent beliefs that can be changed and this is an opportunity for greater engagement in the future.

Conclusion

This paper recognises the contribution that healthcare staff can make to climate change mitigation and recommends research to further explore and understand the psychological barriers.

Introduction

Global warming and climate change pose a serious threat to human health (Watts et al., 2015). The carbon footprint associated with healthcare globally is contributing to ill health, yet widespread inaction and moral disengagement exists (Gifford, 2011). The aim of this literature review was to examine the published research in the field of sustainable healthcare and climate change. This review sought to understand the current body of knowledge around the perceptions of healthcare staff towards sustainable healthcare and climate change, and to identify the barriers to engagement.

According to Fink (2014) before any research can commence it is essential to establish what research has been done within the field and to critically appraise the research for strengths and weaknesses. This provides a baseline upon which researchers can contribute to and build a coherent body of knowledge. This literature review, conducted in 2016, examines nine articles published globally and through a highly structured thematic analysis a total of six themes emerged.

Background

Global Warming

According to Costello et al. (2009) in 1896 the Swedish scientist Svante Arrhenius made the prediction that carbon dioxide (CO_2) produced by human industry could raise the mean temperature of the earth's atmosphere. It was not until the late 1980s that the concept of Global Warming was introduced to the global population. The creation of the Intergovernmental Panel on Climate Change (IPCC) in 1988 was pivotal and symbolised international recognition that Global Warming was occurring (IPCC, 2016). In 1990 the IPCC released its first assessment report whereby the consequences of burning fossil fuels on the environment were made clear and in 1997 the Kyoto Protocol was created serving as a landmark international agreement on the reduction of CO_2 linked to human activity and the promotion of sustainable development (United Nations, 1998).

The IPCC (2016) found that greenhouse gases (GHGs) because of human industry, mainly carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), were being released into the atmosphere trapping heat from the sun causing a global rise in temperature, known as the 'greenhouse' effect. Carbon samples taken from ice around the world demonstrate stable levels of CO_2 throughout history until the mid-1800s when a sharp increase occurred, and levels have been rapidly climbing ever since (Luthi et al., 2008). The rise in temperature around the time of the industrial revolution suggests a strong correlation between human activity and changes to the earth's atmosphere and this is known today as Anthropogenic Global Warming (AGW) according to the IPCC (2014) or climate change as it will be referred to within this research.

Climate change is a result of rising global population and the economic activity associated with supporting that population (Luthi et al., 2008). McLean and Gibbs (2016) describe the concept of globalisation as the interconnectedness of people, technology and business across continents. Selby and Kagawa (2010) highlight that in the globalised world there is an expectation that consumerism-fuelled growth can continue indefinitely, despite the finite resources available on earth. This notion poses two serious points for consideration: the first being that consumerism at the current rate is wholly unsustainable, the second issue is the harm that is being caused in the production of GHGs (Akenji, 2014). At the current rate of CO_2 emission Watts et al. (2015) predict that by 2100 global temperatures will rise anywhere between 2.6ºC to 4.8ºC. The effects of the rise in temperature can now been seen in many areas of the globe, most notably around the equator and major glacial regions around the world (Hansen et al., 2006; Keshavarz, Karami and Vanclay, 2013; McMillan et al., 2014; Racoviteanu, Armstrong and Williams, 2013; and Holland et al., 2015).

Global temperatures have risen by 0.2º Celsius per decade since the start of the industrial revolution resulting in a complex chain of events (Luthi et al., 2008). In equatorial regions this has caused a loss of crops, infertile soil ultimately leading to mass migration away from these arid regions (Hansen et al., 2006). The loss of crops has a significant impact on global food supply placing an additional strain on those areas that continue to produce; food scarcity in equatorial regions is becoming a major economic concern; for example, those living in rural Iran are facing forced migration, which places a strain on urban areas as people search for food/water, work and a better quality of life (Keshavarz et al., 2013).

The rise in global temperature has melted Artic ice fields at a rate of 50 000km^2 per year (McMillan et al., 2014) and glacial recession has been observed in the Himalaya (Racoviteanu et

al., 2013) and Antarctica (Holland et al., 2015). The effects of this have been a mean rise in sea levels of 0.19m (IPCC, 2014) which has already been devastating to low lying populated areas such as the Solomon Islands in the South Pacific (Albert et al., 2016). Of the 20 coral atoll islands that Albert et al. (2014) studied, five vegetated islands were lost between 1947 and 2014 due to rising sea levels. Several villages were affected by costal erosion and rising sea levels. While most inhabitants relocated, some economically disadvantaged families built temporary homes, thus increasing their vulnerability to further storm or wave events (Albert et al., 2016).

The risk of storm and wave events in the future within the United States (US) is significant, it is estimated that somewhere in the region of 3.7 million people are living within one metre of the current high tide mark (Rahmstorf, 2012), indicating that even the smallest rise in sea levels could lead to significant displacement of costal populations. Within the Netherlands, despite advance flood abatement systems (dikes and beach replenishment), rising sea-levels pose a serious threat to ecosystems, health, costal populations, tourism and socioeconomics (Gupta et al., 2004). In contrast, Bangladesh has limited infrastructure to deal with flooding and Brouwer, Akter, Brander and Haque (2007) found that floodplain residents do not have the financial means nor the knowledge to protect themselves from flooding, strengthening the correlation between environmental risk, poverty and vulnerability.

The effects of climate change are not limited to a simple rise in temperature and sea levels. Several adverse events are occurring which have not been predicted; for example, GHGs stored in permafrost (Sheng et al., 2004); oceanic uptake of GHGs; deforestation; and Gulf stream interruption (IPCC, 2014). As glacial ice has melted it has released GHGs that have been trapped in the permafrost for hundreds of thousands of years (Sheng et al., 2004). An example of this is in West Siberian where frozen peat bogs contain 70 billion cubic tonnes of methane, if the gas is

released it will represent 16% of all Anthropogenic GHG emissions from the last 150 years (Sheng et al., 2004). Oceanic uptake of CO_2 has led to a 25% increase in acidity and a reduction in oxygen levels in sea water, resulting in changes to marine ecology (IPCC, 2014). Deforestation fuelled by global consumer demand is simultaneously reducing the amount of CO_2 removed from the atmosphere by trees. The rise in air and sea temperature is affecting the earth's natural circulation of water. The Gulf stream influences much of the earth's weather patterns and due to direct links made to climate change there has been an increase in severe adverse weather events globally which include: extreme temperatures; wildfires; cyclones; flooding and drought (IPCC, 2014).

All these examples linked to climate change witnessed to date and forecast for the future have devastating effects on physical human health and psychological wellbeing (IPCC, 2014). Therefore, the next section seeks to explore some of the effects of climate change on human health and wellbeing, examples are drawn from across the globe to illustrate the diverse impact not only on vulnerable developing countries but also on the developed western world.

Climate Change and Impact on health

Climate change is projected to have a significant impact on human health, exacerbating the ill health that already exist, but also increasing the susceptibility of ill health among vulnerable populations in developing countries (IPCC, 2014). According to Watts et al. (2015) the potential ramifications of a warming planet to human health could be catastrophic and tackling global warming is now a priority for the nine billion inhabitants of earth. The World Health Organisation (WHO, 2015) predict that up to 250,000 additional deaths will be associated with global warming between 2030 and 2050. The health outcomes of global warming are likely to have the most

significant effect on the developing countries where health infrastructure is weak but developed countries will not go unscathed. McMichael, Montgomery and Costello (2012) suggest that the health risks associated with climate change can be divided into four categories: immediate and direct risks; indirect risks; deferred and diffused risks; risks associated with conflicts and environmental refugee flows.

Immediate and direct risks are associated with the changing climate and the increase in severe adverse weather (McMichael et al., 2012). In 2003 Europe experienced a heatwave that claimed extreme loss of life. The death toll in France alone was 14,800 people during a 9-day period. The loss of life was significant and while it predominantly affected the elderly and those with pre-existing health conditions there were a substantial proportion of deaths amongst those 45-55 years of age (Bouchama, 2004). *Indirect risks* involve the disruption to ecological systems that is caused by changes in patterns of infectious diseases and pathogens (McMichael et al., 2012). For example, since the mid-1980s tick-born encephalitis has increased in prevalence in Sweden, during which time the country has recorded milder winters and earlier arrival of spring (Lindgren and Gustafson, 2001*). Deferred and diffused risks* are associated with rural to urban displacement (McMichael et al., 2012) like the Iranian example already discussed. Finally, *risks associated with conflicts and environmental refugee flows* recognises the clear historical link between climate and conflict. A study by Hsiang, Meng and Cane (2011, p. 440) suggested "changes in the global climate driven by El Niño are associated with global patterns of conflict".

Some risks associated with climate change are far removed from comfortable 'Western' living, and Taylor, Dessai and Bruine de Bruin (2014) describe the United Kingdom (UK) public perception that the effects of climate change are a distant threat removed by space and time. They go on to explore the notion of geographical separation from those living in countries that generate

the most GHGs to those who live in developing countries most affected by the impacts of climate change. Therefore, for the UK population it is important to balance awareness of the global consequences of climate change with locally-relevant examples to contextualise the risks (van der Linden, 2015). In addition, the UK population must also make the connection between globalisation, consumerism and sustainability of the future (Selby and Kagawa, 2010).

Within the UK the health risks associated with climate change are well documented. Woodall, Landeg and Kovats (2019) describe some of the likely effects as increased incidence of: heat-related deaths; skin cancers; respiratory disease due to pollution/particulate matter; injury/death due to flooding and severe weather; and the psychological effects of environment degradation. Public Health England (PHE, 2015) forecast that heat-related deaths will increase in the summer months with the South-East of England worst affected.

The World Health Organisation (WHO, 2016) report that cases of skin cancer have doubled since the 1980s largely due to thinning of the ozone layer through use of ozone depleting industrial chemicals such as chlorofluorocarbons (known as CFCs). In the northern hemisphere this has allowed more ground-level ultraviolet radiation and in the UK an average of 86% of skin cancer diagnoses made in 2010 were linked to over-exposure to ultraviolet radiation (Parkin, Mesher and Sasieni, 2011). According to the Committee on the Medical Effects of Air Pollution (CoMEAP, 2015) ground level ozone is a growing problem within UK urban areas. Ground level ozone is a pollutant that is formed by chemical reactions because of anthropogenic GHGs. The health effects of ground level ozone have not been fully quantified but there is evidence to suggest an adverse connection between ozone and respiratory morbidity and mortality (Jerrett, Burnett and Pope, 2009).

Even though flooding in 2007 claimed 13 lives in the UK, advancements in flood defence technology and increased public awareness of the physical dangers of flooding means that it is unlikely for this number to rise significantly according to the Health Protection Agency (HPA, 2015). However, it is the presence of static water (flooded fields, basements) that pose a new risk associated with mosquitoes and vector-borne disease (HPA, 2015). An example of this is dengue fever, the most prevalent mosquito-borne viral disease worldwide claiming 12,000 lives a year (Bouzid, Colón-González, Lung, Lake and Hunter, 2014).

Much of the literature discussed so far focuses on climate change and the threat to physical health. Stanke, Murray, Amlôt, Nurse and Williams (2012) document the lasting health effects of climate change with focus on mental health problems. They studied the long-term effects of traumatic experiences such as flooding and the lasting psychological impact which can lead to substance misuse. Poor mental health and maladaptive coping strategies can have a detrimental impact on resilience and recovery (Stanke et al., 2012). Hayes, Blashki, Wiseman, Burke and Reifels (2018) documents that any climate event (not just flooding) that may displace communities, alter land use, cause financial stress or damage infrastructure has the potential to adversely affect mental health.

In addition to the direct health benefits from climate change mitigation, there is a growing body of evidence to support a range of indirect or *co-benefits* that result from mitigation efforts. The IPCC (2014, p. 121) define co-benefits as "the positive effects that a policy or measure aim at one objective might have on other objectives... co-benefits are also referred to as ancillary benefits". Jennings, Fecht and de Matteis (2019) suggest that the mitigation of climate change can have significant economic and public health benefit. For example, the low-carbon energy sector is estimated to be worth £46.7 billion in the UK employing nearly 225,000 full-time equivalent staff

(ONS, 2020). In addition, as forms of active transport such as walking and cycling are promoted, not only is air quality improved through reduced vehicle emissions but the prevalence of "type-2 diabetes, dementia, heart disease, cerebrovascular disease and cancer" reduces (Jarrett, Woodcock, Griffiths, Chalabi, Edwards, Roberts and Haines, 2012, p. 2198).

Due to the health impacts detailed within this section; there are several ambitious targets to reduce the net carbon emissions in the UK by 80% by the year 2050 (Climate Change Act, 2008). This ambitious target was supported by the COP21 Paris Agreement (European Commission, 2016), which was the first ever legally binding climate deal agreed by 195 countries. The Paris Agreement had several key features which included the need to: limit global warming to less than two degrees Celsius of pre-industrial levels; to reach the peak of global GHG emissions as soon as possible and then start reducing (known as global peaking); to agree new targets every five years; and for governments to facilitate mitigation and adaptation to ensure individuals have the necessary skills to cope with climate change. The UK was one of 100 countries to sign a voluntary pledge to reduce GHG emissions by 2020 (United Nations, 2016).

It is likely that without extreme mitigation there will be pervasive and irreversible effects of global warming on humans and ecosystems (IPCC, 2014), therefore it is necessary for all governments, organisations, communities and individuals to recognise the need for collective and immediate action. This includes the National Health Service (NHS) as it is one of the largest organisations in the UK, employing over 1.3 million staff and accounting for over 8% of the UK's annual GDP (NHS Confederation, 2016). Therefore, the next section will examine the NHS and its carbon footprint and measures that are being taken to create a more sustainable service.

NHS carbon-footprint

Due to the sheer scale of the NHS it is unsurprising that it is the biggest emitter of GHGs in the UK with figures estimating an annual production of 22.8 million tonnes of CO_2 according to the Sustainable Development Unit (SDU, 2015). GHG emissions within the NHS are attributed to several different activities which include procurement (65%), building energy use (19%), and travel (16%) (SDU, 2012). In response to this growing carbon footprint of the UK's healthcare sector, NHS England and Public Health England created the SDU in 2008, the unit supports healthcare, public health and social care organisations to achieve sustainability from an environmental, social and financial perspective (SDU, 2016). The SDU have created guidance documents and toolkits that support organisations to be proactive in reducing their carbon footprint however it is guidance, not policy. The SDU can make recommendations and perform monitoring but there are no penalties for non-engagement. There is legislation that NHS organisations must adhere to and these include: The Climate Change Act (2008); the Public Services Act (Social Value Act) (2013); and the National Adaptation Programme (DEFRA, 2013).

The Climate Change Act (2008) is not limited to the public services however as the largest carbon emitter in the UK, the NHS has a responsibility to meet the carbon-reduction targets set out within this Act. This reduction is a challenge for the NHS when considering the UK population growth of eight million since 1990 according to the Office of National Statistics (ONS, 2016), and the associated 18% increase in NHS activity between 2007 and 2016 (NHS England, 2016). Despite this the NHS has managed to reduce its carbon emissions by 11% (NHS England, 2016).

The Public Services Act (Social Value Act) (2013) sets out principles which encourage public services to consider how the services they commission impact upon the environment, the economic and the social wellbeing of the community it serves. While this policy is underpinned by value for money, there is a wider recognition that immediate 'value' may have longer term negative influences on society and the environment (NHS England, 2013). The British Medical Association (BMA, 2014) claim that 30 billion is spent annually on the procurement of health care related equipment. Equipment is sourced from a global market and there is significant evidence of poor labour standards and lack of basic human rights in some manufacturing sites which has led to the BMA's campaign for ethical procurement (BMA, 2014).

The National Adaptation Programme's (DEFRA, 2013) primary focus is on adaptation rather than mitigation, recognising that the UK climate is changing despite endeavours to reduce climate change. The National Adaptation Programme (DEFRA, 2013) supports resilience amongst the UK population to deal with adverse events and the implications for the NHS range from estates and infrastructure planning (water efficiency; energy efficiency) through to coordinated cross-sector working and the creation of Joint Strategic Needs Assessments (JSNAs). The use of JSNAs to identify local priorities enables shared responsibility between the health sector, social care sector and public health (Department of Health, 2011).

Despite the carbon reduction in the NHS it continues to contribute significantly to overall UK emissions and paradoxically it is contributing to ill health as a result. The NHS employs 1.1 million full-time equivalents in the UK (The Nuffield Trust, 2021). Of which 321,655 are nurses and midwives, 146,222 are scientific or therapeutic staff, and 117,842 are doctors (The Nuffield Trust, 2021). It is recognised that these healthcare professionals are in a strong position to influence

sustainable practice (McMillan, 2013), yet there is little empirical research that explores what they think about climate change.

Aim

The aim of this literature review was to explore empirical research to establish what is known about healthcare professional's perceptions towards climate change and sustainable healthcare.

Method

This section details the method and search parameters and according to Aveyard (2010) a literature review should be a comprehensive and interpretive review of literature on a specific topic, with a view to creating an overall picture of what is known about a topic. This is followed by the findings of the literature review which were subject to a thematic analysis whereby themes were created to describe and interpret the data.

The search process began with mind-mapping a few key words and sequences, various combinations were tested within Google and within a randomly selected database (British Nursing Index). This exploration of key words, truncation and Boolean operators was practised to ensure that the final key words and their sequence was appropriate and produced maximum results. Three sequences were selected. The first two sequences captured the nursing workforce and the third captured the wider healthcare workforce:

1. Nurs* AND climate change OR global warming;
2. Nurs* AND sustainab*;
3. Environmental Sustainability AND Health.

Four databases were selected for this literature review with the aim to cover the nursing and wider healthcare workforce: Cumulative Nursing and Allied Health Library (CINAHL); British Nursing Index (BNI); Applied Social Sciences Index and Abstracts (ASSIA) and Medline. Most search sequences initially returned a high volume of results more than 4896 articles, therefore filters to *title only* and *peer reviewed articles* were applied. The filters available from each database were different therefore full details can be found in Appendix 1. Despite the filters applied there

were 456 articles remaining. All these articles were manually screened by the titles initially and if appropriate the abstract. This exercise was extremely useful and allowed the inclusion and exclusion criteria to be applied (Table 2). Reasons for exclusion were as follows: lack of relevance; duplicates; alternative use of the word 'climate'; sustainability pertaining to survival of new initiatives / service development.

Table 2

Inclusion and Exclusion Criteria

Inclusion Criteria	**Exclusion Criteria**
Primary Research (quantitative, qualitative and mixed method research) Theoretical Research (concept analyses and systematic reviews) English language Peer reviewed, journal articles Any healthcare professional	Narratives / commentaries Non-English language Non-peer reviewed / unpublished Research evaluating services / initiatives All papers that refer to a 'climate of change'

Following the initial scanning of titles, 31 papers were referred to the next stage which involved reading the abstracts. At this stage it became apparent that a lot of the papers were not research (professional practice papers; articles; special features; continuing professional development; and editorials) and 19 were excluded on this basis. These articles did however prove a useful insight and were set aside for supplementary use. This resulted in ten articles selected for inclusion within this literature review: three qualitative; three quantitative; one mixed method; and three concept analyses. Most of the articles focused on nurses as the main participants however

there were some studies that focused on other healthcare professionals such as public health registrars (Charlesworth, Ray, Head and Pencheon, 2012); and Dunphy (2014) included nurses, doctors and a range of allied health professionals.

Critical Appraisal

The three qualitative papers included within the literature review were critically assessed using the Critical Appraisal Skills Programme: Qualitative Checklist (CASP, 2013). The checklist is designed to assist researchers to make sense of evidence and to select the most credible qualitative studies which is an essential stage of any literature review (Aveyard, 2010). A scoring system was implemented (Appendix 2) to ensure a transparent approach to quality and rigour. Because of the critical appraisal process one article (Griffiths, 2006) was excluded due to lack of methodological detail, resulting in nine research papers being taken forward for analysis.

The quantitative research papers and the mixed methods paper were appraised using the British Medical Journal's (2005) critical appraisal checklist for questionnaires (Appendix 3). The appraisal of concept analyses proved more challenging as there is no checklist or tool designed specifically for this purpose. After reviewing the options, the three concept analyses were appraised using Greenhalgh, Robert, Bate, Macfarlane and Kyriakidou (2005) checklist for mixed-method case studies and other in-depth complex designs (Appendix 4). The final nine articles can be seen in Table 3 and an overview is provided in the next section.

Table 3

Primary research articles included for review

Anåker, A., Elf, M. (2014). Sustainability in nursing: a concept analysis. *Scandinavian Journal of Caring Sciences, 28,* 381-389.
Anåker, A., Nilsson, M., Holmner, Å., Elf, M. (2015). Nurses' perceptions of climate change and environmental issues: a qualitative study. *Journal of Advanced Nursing, 71, 8.* 1883-1891.
Charlesworth, K., Ray, S., Head, F., Pencheon, D. (2012). Developing an environmentally sustainable NHS: outcomes of implementing an education intervention on sustainable health care with UK public health registrars. *NSW Public Health Bulletin, 23, 1-2,* 27-30.
Dunphy, J. L. (2014). Healthcare professionals' perspectives on environmental sustainability. *Nursing Ethics, 21, 4,* 414-425.
Grootjans, J., Newman, S. (2012). The relevance of globalization to nursing: a concept analysis. *International Nursing Review, 60,* 78–85.
McMillan, K. (2014). Sustainability: an evolutionary concept analysis. Exploring Nursing's role within the sustainability movement. *Journal of Advanced Nursing, 70, 4,* 756–767.
Polivka, B. J., Chaudry, R. V., Mac Crawford, J. (2012). Public health nurses' knowledge and attitudes regarding climate change. *Environmental Health Perspectives, 120, 3,* 321-325.
Richardson, J., Grose, J., O'Connor, A., Bradbury, M., Kelsey, J., Doman, M. (2015). Nursing students' attitudes towards sustainability and health care. *Nursing Standard, 29, 42,* 36-41.
Richardson, J., Heidenreich, T., Álvarez-Nieto, C., Fasseur, F., Grose, J., Huss, N… Schweizer, A. (2016). Including sustainability issues in nurse education: a comparative study of first year student nurses' attitudes in four European countries. *Nurse Education Today, 37,* 15-20.

Overview of articles included for review

Anåker and Elf (2014) conducted a concept analysis using Walker and Avant's model (2011, cited by Anåker and Elf, 2014). A total of 14 articles were selected following a search using the following keywords: "sustainability, sustainable, environmental, environmental health, environmental medicine, health, nursing and nursing care" (p. 383). The aim of the paper was to describe the concept of sustainability in nursing from an environmental perspective and provide a definition that would aid the understanding of sustainability within the field of nursing. The

outcome of the critical appraisal was positive and this concept analysis was a systematic and rigorous process.

Anåker, Nilsson, Holmner and Elf (2015) conducted a small descriptive and exploratory study involving 18 nurses in Sweden. Their aim was to explore nurses' perceptions of climate change and environmental issues and their role in sustainable development. Using content analysis, the study revealed that there is a disconnect between environmental issues and the daily work of nurses. They found an increasing need for nurses to understand the impact of healthcare on the environment and a need for healthcare to respond to climate issues. This study scored 18/18 in the CASP critical appraisal and the process and findings were well documented and transparent.

The article by Charlesworth et al. (2012) is a brief report of a pilot study involving 200 UK public health registrars. The registrars were asked to complete a questionnaire on their knowledge, attitudes and practices at the start of a workshop, they then received a four-hour workshop designed to raise awareness of climate change, sustainability and health. They then completed the same questionnaire following the session. The study sought to compare mean scores between the baseline and the post-intervention questionnaire. One of the objectives of the workshop was for the registrars to then deliver their own workshop to cascade the learning to their own teams. As a result, Charlesworth et al. (2012) contacted 26 random registrars by phone after three months, completing a semi-structured telephone interview on whether they had themselves delivered the session. The paper presents very limited information on the questionnaire and interview content, this makes it difficult to establish the reliability and validity of the approach used. The study was included despite these limitations due to the sheer sparsity of literature. The authors found that there were many barriers to engagement with sustainability in healthcare.

Dunphy (2014) completed a large qualitative study with Australian healthcare professionals with the explicit aim of identifying strategies to overcome barriers to sustainable care. Data were taken as part of a larger study involving 64 healthcare professionals from across a range of disciplines in Australia. Following semi-structured interviews thematic analysis was used to draw out key themes and the differences between disciplines. The study revealed many barriers, some associated with organizational constraints but many associated with social barriers. One of the finings illustrated a significant difference between behaviors at home and at work. The study highlighted the growing beliefs from participants that sustainability needed to be addressed at an individual and systemic level. Participants believed that engagement with sustainable healthcare could be achieved through addressing workplace cultures, community engagement and greater political activity. The CASP critical appraisal was positive and the research scored 15/18.

Grootjans and Newman (2012) performed a concept analysis with the intention of addressing some of the challenges presented to nurses within a globalized world and the increasing need for nurses to consider the global impact of local actions. During critical appraisal it was apparent that the paper did not provide an overview of the literature they included therefore it is unclear how many were included within the final analyses. Despite this, the findings of the concept analysis detailed the growing levels of concern within the nursing community for social justice and equity globally, and the need for nurses to think globally but act locally.

McMillan (2014) performed a concept analysis with the aim of exploring the evolution of the concept of sustainability in nursing. The rationale for the research was born out of ambiguity surrounding the concept and the difficulty that nurses have in articulating their role within the sustainability movement. Following a structured model, McMillan (2014) analysed more than 60 sources using sustainability and nursing as key words. The research found that sustainability was

a fragile concept, and its success was dependent on engagement from people in the process. This paper provided a detailed and rich account of the concept analysis and the findings are a useful insight into sustainability and nursing.

The article by Polivka, Chaudry and Mac Crawford (2012) was a survey of 176 public health nurse administrators in the US, examining knowledge and attitudes of climate change along with perceptions of whether their own employer was prepared and able to address climate change. The questionnaire was based on existing instruments and while example questions were provided the authors do not report which instruments were used. The authors did not pilot the questionnaire but did report this as a potential limitation of the study. The critical appraisal highlighted that the title and introduction would suggest that the focus was on public health nurses, but the sample was predominantly public health nurse administrators (79.9%). There was no justification for this shift in focus and no description of the administrator role. The data collected was part of a larger study involving local health authorities and carbon reduction strategies. The study revealed that public health nurse administrators believed they had a role in tackling climate change but felt that their employers were poorly equipped due to limited budgets and resources.

The article by Richardson et al. (2015) presents an evaluation of attitudes towards climate change, sustainability and nursing amongst a sample of 57 nursing students. The sample was divided into two, with one group of child nursing students who received a sustainability and health skills session, and the other group of adult nursing students who did not participate in the session. The authors had created a Sustainability Attitudes in Nursing Survey (SANS) which had not been previously validated or piloted, however the authors do recommend a cautious approach to the findings and suggest further research is needed. The SANS was administered to both groups of students three months after the session; however, the SANS was not administered before the

session which means that a comparison to baseline data and mean differences cannot be established. The study revealed that there was little difference between groups, and both believed that sustainability was an important agenda. They found that those who had received the educational skills session did not have different scores to the control group but in the absence of baseline data it is difficult to establish if the skills session had an impact or not.

The article by Richardson et al. (2016) is a follow on from the previous article. During this research the authors extend their research to four European countries with a total sample of 916 nursing students. In this study, baseline data were gathered via the SANS at the start of the nursing programme prior to any exposure to sustainability teaching and a comparison between countries was made. The authors also assessed the psychometric qualities of the SANS_2 questionnaire (a modified version following pilot feedback). During critical appraisal a pitfall of this study was the sample. The first issue was the size of the UK sample in comparison to the other countries (the UK sample is 450 compared to Germany: 196, Spain: 124, Switzerland: 146). The second issue was the lack of reporting around response rate, non-response and incomplete questionnaires. Key information was presented in the summary abstract and not within the main article. The findings suggest that German students demonstrated the strongest beliefs about the importance of sustainability in nursing curriculum. They also found that the SANS_2 questionnaire was a valid means of assessing student nurses' attitudes towards sustainability.

Data Analysis

Of the nine articles selected, each was subject to a structured thematic analysis as recommended by Braun and Clarke (2005). The first phase of the thematic analysis was associated with familiarisation with the data. This initial stage involved reading and re-reading the papers and

noting down ideas and thoughts. The second phase involved generating initial codes which according to Nowell, Norris, White and Moule (2017) is an important step of interacting with the data and focusing on specific characteristics of interest. The codes were assigned to features that were both important in relation to the literature review but also in terms of prevalence. Codes were systematically applied to the entire data set, as new codes were applied it was necessary to go back over previous responses to ensure all codes had been applied consistently.

Unanticipated findings that were not linked to the themes of the literature review were included which is an important inductive stage of analysis (Nowell et al., 2017). The third phase involved searching for overarching themes. This involved placing codes together into logical and coherent groupings that contained internal homogeneity (Patton, 2002). Phase four involved reviewing the themes ensuring the codes cohered together in a meaningful way and that there was enough external heterogeneity between themes (Patton, 2002). Phase five involved a final stage of refinement and naming of themes, and phase six involved divergence and the creation of this report which will illustrate vivid and compelling extracts (Braun and Clarke, 2006).

According to Braun and Clarke (2006) there are several key questions to consider during data analysis. The first question was to consider what counts as a theme, at this stage a decision needed to be taken in relation to size or prevalence or *keyness* (importance) of the theme. The decision was taken to focus on importance of themes in relation to prevalence. The second question was to contemplate whether the analysis was going to be descriptive of the entire data set or of specific themes. At this stage a description of the entire dataset seemed appropriate (Patton, 2002). The final question was to consider if the themes were semantic or latent, semantic being themes selected from surface meaning, latent being an exploration of underlying ideas and assumptions.

Latent themes were deemed to be extremely important as they identify the conceptual features that give deeper meaning to those surface statements.

Findings

A total of six themes were identified (Table 4) and the prevalence of each theme within the articles reviewed can be seen in Table 5. A summary of each theme is provided and then the remaining part of this section explores the themes in depth and in relation to the wider (non-healthcare) related theory.

The first theme was associated with a general sense of ambiguity around the word 'sustainability' often marred by notions of financial sustainability or service longevity. This was combined with confusion over who has a role to play in sustainability with responsibility often falling to people within estates and infrastructure roles. The second theme was a consistent and reoccurring notion that healthcare staff were unable to comprehend the global impact that their local actions were having on people and ecosystems. This endemic blindness was often linked to the immediate pressures of caring for sick patients which meant that staff were unable to think about the bigger consequences.

The third theme was a sense of numbness that comes from the sheer enormity and impact of climate change. Staff reported feeling helpless and what little actions they could take were futile in the grand scheme of things, this often resulted in no action being taken at all as they felt overwhelmed by the situation. The fourth theme drew attention to the power of social norms and social conformity and illustrated how taboo climate change as a topic can be. Staff reported that they felt under pressure to conform to social norms, to maintain the status quo and not step out of the socially constructed professional identities.

The fifth theme highlighted the differences in sustainability practices that exist between home and work. The findings suggested that healthcare staff were able to act pro-environmentally at home but are unable to enact these values at work due to a mixture of physical and psychological barriers. The sixth and final theme drew attention to the complexity of the psychology around climate change and sustainable healthcare. This theme referenced many psychological processes that healthcare staff use to avoid the ascription of personal responsibility and to self-exonerate.

Table 4

Emergent themes

No.	Theme	Description
1.	Meaning of sustainability	Confusion around the term sustainability.
2.	Endemic blindness to global issues	Lack of openness to see the impact that local actions have on global issues.
3.	Environmental numbness leading to inaction	Feelings of futility and helplessness result in people taking no action at all.
4.	The power of social norms	The desire to confirm to social norms and to avoid the topic of climate change.
5.	Priority of sustainability for front line staff (home versus work)	Difficulties in balancing the needs to the planet while trying to manage daily work / life pressures
6.	Individual and social barriers / psychology of responsibility and blame	The complex psychology of self-exoneration.

Table 5

Prevalence of Themes in Articles Reviewed

		Themes					
Authors	**Design**	**1**	**2**	**3**	**4**	**5**	**6**
Anåker and Elf (2014)	Concept analysis	X		X	X		
Anåker, Nilsson, Holmner, and Elf (2015)	Qualitative	X	X	X	X	X	X
Charlesworth (2012)	Mixed Method		X	X	X	X	
Dunphy (2014)	Qualitative	X	X	X	X	X	X
Grootjans and Newman (2013)	Concept analysis	X	X				
McMillan (2014)	Concept analysis	X	X			X	
Polivka, Chaudry and Mac Crawford (2012)	Quantitative		X	X	X		X
Richardson, Grose, O'Connor, Bradbury, Kelsey and Dorman (2015)	Quantitative		X			X	
Richardson et al. (2016)	Quantitative	X			X	X	

Meaning of sustainability

Sustainability in a non-health setting is defined as "a development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987, p. 43). Sustainability within a healthcare context has traditionally focussed on the implementation of a new practice within an organisation and the ability of that practice to be adopted as a routine (Doyle et al., 2013). The sustainability of healthcare is therefore frequently cited as the longevity of programmes, the continued benefit of programmes and the maintenance of capacity and because of this the word sustainability often conjures up an association with evaluation rather than planning (Scheirer, 2013). Scheirer and Dearing (2011, p.

2060) suggested that sustainability is the "continuation, confirmation, maintenance, durability, continuance and institutionalisation" of a project or programme.

When examining definitions of sustainability Anåker and Elf (2014) identified two socially acceptable usages, the first pertaining to the potential for something to survive over long periods, which is aligned to Scheirer's (2013) definition, and the second pertains to something that survives over a period but that does so while promoting ecological resilience or survival. These definitions set forth what was a traditional view of the term and then latterly a more modern interpretation with a fundamentally different focus (Grootjans and Newman, 2012). The more modern definition of the word *sustainability* was favoured within this review due to the acknowledgement of the wider global ecology.

Sustainability was frequently mentioned within the health and social care literature and in fact there was a plethora of journal articles that extensively evaluate the sustainability of new services (Scheirer, 2005; Doyle et al., 2013; Scheirer, 2013) and the majority did not have any ecological focus. These studies tended to look at the financial and resource longevity of change initiatives and tend to be evaluative and outcome focussed (McMillan, 2013). There was, however, recognition that ecological sustainability was an important issue for healthcare staff and one that needed to be developed (Richardson et al., 2015).

Within the papers that do focus on sustainability in terms of wider ecology there was consensus that the topic was not clearly defined within health and social care (Dunphy, 2014). McMillan (2013) recognised that nurses are at the centre of the sustainability movement, due to the size of the nursing workforce and their intensive use of resources, yet the concept is ambiguous, and lack of clarity may stifle the identity and direction of the profession. Because of this there

were several concept analyses that sought to define sustainability within healthcare (Grootjans and Newman, 2012; McMillan, 2013; Anåker and Elf, 2014).

Grootjans and Newman (2012) were the first to perform a concept analysis and they offered a framework for sustainable healthcare knowledge that included: ecology of health; thinking globally; and health promotion. The emphasis of their framework was to encourage healthcare staff to act locally but think globally. McMillan's (2013) concept analysis followed, however due to the complex nature of sustainability within nursing specifically she was unable to clarify the concept. Anåker and Elf (2014, p. 387) to date have the most coherent definition of sustainability suggest that:

> The concept of sustainability in nursing can be defined from a core of knowledge in which ecology, global and holistic comprise the foundation. The use of the concept of sustainability includes environmental considerations at all levels. The implementation of sustainability will contribute to a development that maintains an environment that does not harm current and future generations opportunities for good health.

Dunphy (2014) alludes to some of the language already used within practice such as *green infrastructure* and *carbon footprint* which can be confusing and ambiguous to healthcare staff. While the use of metaphors can sometimes be useful Deignan, Semino and Paul (2019) caution that these linguistic metaphors can mislead or camouflage the unpleasant or harmful realities of the subject. McDonnell, Abelvik-Lawson and Short (2020) takes this a step further to criticise the term *sustainable development* as an oxymoron proffering that any consumptive development cannot be sustainable. Selby and Kagawa (2010) were ahead of the times and supported the notion of *sustainable contraction* as a more appropriate reflection of the radical change, in action and thinking, needed to halt climate change.

Whatever language, terminology or definition is used there is a call for definitions and shared language that can be used across the health and social care sector and beyond (Dunphy, 2014; Anåker and Elf, 2014). Whatever language is adopted it must safeguard the balance between economic and ecological sustainability; it must avoid linguistic camouflage and depict the true risks and realities; and recognise the position of healthcare professionals to influence change.

Endemic Blindness to 'global' issues

Globalisation was defined by Mclean and Gibbs (2016, p. 3) as a *flattening* of our world whereby factors such as "large-scale migration..., ease of travel..., improved communication technology..., growth of multinational corporations" have created a connectedness across continents. There are strong links between globalisation and health issues such as the spread of infectious disease; non-communicable disease, poor physical and mental health linked to environmental issues (Nicholson, McKimm and Allen, 2016). Global health is now a consistent feature in the education of health professionals however there are a significant proportion of health professionals who have not been introduced to this concept (Nicholson et al., 2016). Goodman (2011) highlights the importance of global thinking within nursing and suggests that the nurse of the future is one who can make coherent links between local actions and global consequences and is able to proactively contribute to sustainable healthcare. Therefore, there is a challenge presented to health professionals to develop global thinking at all levels (Bragadóttir and Potter, 2019).

Grootjans and Newman (2012) documented an important theme that links social justice, health equity and nursing. They provided a narrative on the history of nursing and the quest to create social advocacy for their patients. However paradoxically, despite this deep and meaningful

interest in the patient there was a lack of concern for people beyond the immediate care context and the social inequality they may face. Anderson et al. (2008 cited in Grootjans and Newman, 2012, p.81) describe this as an "endemic blindness" to global issues and it is not so much associated with lack of care, but more to do with a fundamental lack of appreciation of the "interconnectedness of our planet" (Bradbury-Jones, 2009 cited in Grootjans and Newman, 2012, p.79). McLean and Gibbs (2016) suggest that healthcare education, and specifically an absence of international placements or learning opportunities, may be contributing to this inability to connect to global health issues.

Anåker et al. (2015) found that nurses in Sweden had a good understanding of environmental issues at a local level and that they made a conscious decision to prioritise the environment closest to their patient, for example, maintaining the patient's comfort, safety and hygiene. Consideration of climate change and its effects on a global level were not seen as important within the context of day-to-day care and emphasis was placed upon environmental issues within the ward and hospital (Anåker et al., 2015). Consideration of the environment within nursing models and theories have tended to be on the immediate environment and as such have not fostered global thinking. For example, Kenny (1993) criticised the use of Orem's nursing model nearly 30 years ago but despite the pitfalls the model is still widely used within practice and education settings (Malekzadeh, Amouzeshi and Mazlom, 2018; Hellqvist, 2021). Therefore, if educators are still teaching these dated models of nursing, it is no surprise that graduate nurses are poorly prepared to conceptualise the links between climate, resources, clinical practice and health (Richardson, Grose, Doman and Kelsey, 2014).

In contrast, Polivka et al. (2012) suggested that public health administrators in the US were more likely to consider climate change as a global issue rather than a local concern, suggesting

that they do not understand the global impact of healthcare nor the local impact of climate change. Rowthorn (2015) explores the disconnect between local actions, climate change and the consequences for developing countries and describes siloed thinking within healthcare. Bandura (2007) explains that all the time people feel unaffected, and standards of living maintained, there is little motivation to question the ethics, humanity and impact of current behaviours and consumerism. Polivka et al. (2012) found that 19% of the 176 public health administrators surveyed thought that there were no health issues in the US because of climate change; it is unclear if this assertion is based on genuine ignorance or literal denial (Cohen, 2001).

This may suggest that there are cultural differences between developed countries towards the impact of climate change. Swedish nurses seem to have their focus firmly on the local impact (Anåker et al., 2015), whereas US public health administrators appear to feel that climate change is an issue for far removed developing countries (Polivka et al., 2012). With both examples it is unclear from the literature if nurses were aware of how their actions impacted upon climate change and if so if they simply chose to ignore their own contribution. In Australia, Dunphy (2014) found that healthcare professionals struggled to make connections between local actions versus global implications, and the problem seems to stem from a feeling of either disconnection or disempowerment. The notion of climate change for many developed countries presents an issue that is so distant and removed in space and time that the perception of threat is minimal (Taylor et al., 2014). According to van der Linden (2015) there is a strong instinctual drive to focus on immediate issues that pose a threat to the individual. This could lead to passivity due to an inability to comprehend the abstract threat of climate change and an incapability to relate or identify with the victims or those experiencing the plight of climate change (Cohen, 2001).

While there were no primary research studies that explored nurses' perceptions of climate change and globalisation within the UK, there were some studies that examine sustainability in the NHS. For example, research by Charlesworth et al. (2012) suggested that there may be some systemic issues with the NHS that perpetuate an introspective view and prevent global thinking. They describe how the NHS works in a reactive manner, responding to issues with short term solutions. This is supported by Griffiths (2006) who found that senior NHS staff commented on the insular culture within the NHS towards sustainable development. Dunphy (2014) found that current healthcare systems have created a target driven culture that is disconnected from values. This culture and lack of vision for the future may inhibit healthcare staff to make coherent connections between local actions and global consequences and to act accordingly.

There appears to be a need to balance knowledge and understanding between the local and global impact. Firstly, healthcare professionals need to understand the effects of climate change on their local community. Imagery and messages that contain far-removed people and places perpetuates the sense of distance in time and space (Bandura, 2007). In addition, repeated bombardment of shocking headlines has led to people neutralising, evading and switching off to those messages (Taylor et al., 2014). Therefore, contextualising climate change to local settings is crucial. Jennings, Fecht and de Matteis (2019) stress the need to emphasise personal gains or co-benefits which may improve quality of life and save money (for example through reduced car use). In addition to this, healthcare professionals need to understand the impact that climate change is having on developing countries and the impact that consumptive lifestyles and behaviours has on these vulnerable communities (Williamson, Satre-Meloy, Velasco and Green, 2018). The adage *think globally, act locally* is a means of instilling an awareness of personal responsibility and solving health problems with lateral thinking (Chen et al., 2020). There is also a need to take this

knowledge and understanding and translate it into actions and behaviours, which considering current pressures on front-line staff (Wray, 2013) poses a significant challenge.

Environmental numbness leading to inaction

Within the literature reviewed there was a wealth of information suggesting that the concept of climate change is too large to comprehend and the sheer scale of the problem leaves people feeling helpless and disengaged (Anåker et al., 2015; Dunphy, 2014; Charlesworth et al., 2012). Individuals who feel disempowered to change can lead to communities that appear indifferent to environmental problems according to Topf (2005, cited in Dunphy, 2014, p. 420) who goes on to suggests that this can create a sense of "environmental numbness" which happens when individuals and communities are aware of the problem but do not act. Cohen (2001) explores this form of *implicatory denial* whereby reality and facts are acknowledged but they are screened and filtered thus preventing psychological distress and preventing any moral imperative to act. This type of denial is an acceptance of the reality that something exists but a denial of the risks and/or impact of that reality (Cohen, 2001) and this further supports Bandura's (2007) moral disengagement theory.

According to Department for Environment, Food and Rural Affairs (DEFRA, 2005, p. 25) "information alone does not lead to behaviour change" and despite consensus amongst climate experts and the public that climate change is a reality and a threat, there is mainstream inaction. This ability to compartmentalise is a form of *cognitive dissonance* (Festinger, 1957), whereby the dangers and risks associated with something are kept separate from normal everyday values. A commonly cited example of cognitive dissonance is smoking tobacco – a known carcinogen, a

smoker may know the health risks associated with smoking but continues nevertheless. Cognitive dissonance may be particularly relevant to healthcare staff who are by the very virtue of their role caring and compassionate yet participate in activities at work that contribute to climate change on a significant scale, for example, using disposable items and combustion of hazardous clinical waste (Muñoz, 2012). Cohen (2001) suggests that there are three means to resolve cognitive dissonance: attitude or behaviour change; internal exile (avoiding conscious thoughts); and the distortion of information (drawing upon culturally approved denials). Changing attitude and behaviour is the hardest, leaving internal exile and distortion of the truth as the favourable options (Cohen, 2001). For example, healthcare professionals may avoid conscious thoughts about the chemicals that they use to decontaminate equipment and may draw upon the culturally approved denial that they are doing good by preventing the spread of infection (Muñoz, 2012).

Charlesworth et al. (2012) provided a four hour *train the trainer* style workshop on climate change, sustainability and the NHS to 200 public health registrars. Despite a statistically significant improvement in knowledge pre- and post-intervention, only one third of registrars had facilitated a session themselves at the three-month follow-up. Charlesworth et al. (2012, p. 29) suggest that one possible reason for this lack of engagement could be the "critical and balanced approach to all new evidence which may result in our being overly sceptical of new health threats and opportunities". Nilsson, Bergquist and Schultz (2016) support this notion and found that the public were sceptical about the seriousness of climate change and the effectiveness of solutions. Ajzen and Sheikh (2013) add to this notion in the context of the *theory of planned behaviour* and suggest that anticipated consequences of an action have a significant influence over the attitude towards a behaviour. Therefore, a poor anticipated outcome or consequence will foster inaction as found in Poortinga, Spence, Whitmarsh, Capstick and Pidgeon's (2011) study of UK public.

Woods, Coen and Fernandez (2018) discuss the exercise of moral agency whereby individuals apply a complex series of judgements and self-regulatory systems to the way that they behave. Actions are governed by moral standards on a personal and societal level that serve as a guide to inform behaviour. However, Luo and Zhao (2021) describe a series of mechanisms whereby moral standards can be selectively disengaged. This is noteworthy in the context of the NHS, whereby the negative effect (CO_2 emissions) are cognitively reconstructed to become righteous and socially acceptable (to deliver an essential health service). This is known as moral justification however there is another mechanism called selective inattention whereby the negative effects are conveniently ignored (Peeters, Diependaele and Sterckx, 2019).

Anåker and Elf (2014, p. 386) found that "confidence in the future" and "willingness to change" were key elements to sustainable development, without which nurses have little hope of creating a sustainable profession. A very real risk to this is fatalism which was observed by Mayer and Smith (2019) who found that a resignation to the irreversibility of climate change was a significant barrier to engagement which may link to passivity and learned helplessness (Moreland, Ewoldsen, Albert, Kosicki, Clayton, 2015). Fatalism and resignation may be associated with the *bystander effect* which Latané and Darley (1969) describes as being witness to threatening or disturbing information or events yet failing to intervene or act, they go on to explain that bystanders may tend to either ignore the situation, underestimate their responsibility to act or to distort the seriousness of the situation.

The power of social norms

A consistent feature within the literature reviewed was the desire of health professionals to maintain social norms and to avoid stepping out of what was perceived to be socially acceptable behaviour (McMillan, 2013; Dunphy, 2014). *Norm theory* as discussed by Kahneman and Miller (1986) describes the process by which judgements, decisions and emotional responses are formed based on experience and social construction. Social norms can be defined as a set of externally validated ways of thinking and behaving (Blasch and Ohndorf, 2015). These social norms have led to unconscious habitual behaviours that go largely unquestioned within society and can block the adoption of new behaviours (Bratt, Stern, Matthies and Nenseth 2015). Seto, Davis, Mitchell, Stokes, Unruh and Ürge-Vorsatz (2016) goes on to explain how standards of living become perceived as *needs* rather than *want*s and social norms lock people into a strangle-hold of un-environmentally friendly behaviour. This section seeks to explore some of the social norms that prevent action on climate change. Firstly, the strength of professional identities (or paradigms) and how this inhibits independent thought on climate change will be explored; followed by the avoidance of climate change as a discussion point due to the perceived political nature of the subject; and finally, the notion of *moral offset* to justify inaction.

Tajfel and Turner's (1986, cited in ten Hoeve, Jansen and Roodbol, 2014) *social identity theory* suggests that the self-concept of a role/profession is based on the image or identity assigned to them by society. Willetts and Clarke (2014) suggest that professional identity in healthcare is a complex social activity, being strongly influenced by group behaviour, sense of belonging and inter-group relationships. Throughout history classic nursing models such as Roper, Logan and Tierney (2000) and Orem (2001) have sought to create a systematic approach to care, thus strengthening conformity to an agreed professional identity. However, according to McCrae (2011,

p. 225) these models can be highly restrictive and can create a practitioner who is prone to "compartmentalised and concrete thinking" which may in turn affect an individual's willingness to think about sustainable healthcare. These dominant *professional paradigms* that stipulate the purpose of a profession can inhibit freedom of thought and indoctrinate professionals to fit a certain group identity (Dunphy, 2014). Montalvo and Byrne (2016) comment on the notion that nurses, like much of the general population are reluctant to engage in subjects deemed as political in nature. Garbett and McCormack (2004) have argued that care of the patient is done so from an emancipatory standpoint, with the patient at the centre of care that is free from bureaucracy and hierarchy, and as a result, controversial topics such as climate change and environmental sustainability are mutually ignored (Dunphy, 2014).

To align with professional paradigms group of staff may deploy *emotional convergence*, a process through which they affiliate their emotions with one another, strengthening social bonds (van Der Schalk et al., 2013) and ensuring a strong disciplinary identity (Dunphy, 2014). Ten Hoeve et al. (2014) suggest that nursing as a profession is held back by traditional values and social norms, which can mean that any actions or behaviours that do not align with the profession's core values and responsibilities are avoided. This may prevent nurses speaking out on topics such as climate change through fear of being rejected by their peers and the need to ideologically conform (Guy, Kashima, Walker and O'Neill, 2014). Richardson et al. (2016) found that the environmental behaviour of student nurses was largely influenced by their perception of peer behaviour which strengthens the concept of social norms.

To maintain social norms and fit in to professional paradigms public health administrators in the US avoided topics pertaining to climate change due to political controversy (Polivka et al., 2012). Dunphy (2014) also found that health professionals avoided raising concerns about climate

change due to: fear of being socially ostracised, lack of authority to raise such issues, lack of understanding; and lack of experience. This is supported by Montalvo and Byrne (2016) who imply a pandemic apathy within healthcare towards politics and an overriding fear of social isolation or rejection from the professional group that may supresses any actions that deviate from social norms. Sparkman and Attari (2020) found that the public in the UK perceived *'do-gooders'* as undesirable and led to people feeling defensive about their own lifestyles. Derogation of those attempting to reduce climate change is commonplace according to Minson and Monin (2012) who theorise that this tactic is used to trivialise the influence of human activity on the planet.

Charlesworth et al. (2012) identify the notion of *moral offset* as a barrier to acting on climate change. Moral offset is described by Schrems and Upham (2020), when examining environmentalists behaviour, as the belief that the good that comes out of their professional lives can cancel out their own carbon footprint. In other words, some of the leading environmentalists are not practising what they preach, this is illustrated by United Nations (2015) who verified 22,000 people travelled to Paris in 2015 for COP21 generating 21,000 tonnes of CO_2. Therefore, it could be argued that healthcare professionals exercise moral offset towards climate change in the same way as environmentalists, which is justified because of the care and 'good' that is done towards their patients overrides the harm that is done through healthcare (Anåker et al., 2015). Moral offset can be linked to an overall sense of *cultural denial* whereby the whole society slips into a collective state of denial (Cohen, 2001).

Priority of sustainability for front line staff: home versus work

Throughout the literature reviewed a reoccurring theme that emerged was the perceived level of priority assigned by health professionals to sustainability and environmental issues. Anåker et al. (2015) conducted a qualitative study of nurses perceptions of climate change and a major finding was that within high pressure nursing environments being environmentally sensitive is simply not a priority. Front line staff described themselves as being reactive to the patient's needs and primarily focused on saving lives (Anåker et al., 2015). Bashir et al. (2020) discusses the need for organisations to be proactive and adaptable to create a sustainable future, and she suggests that those who fail to actively engage will see progressive decline and a poor corporate identity. This is further discussed by Dunphy (2014) who found that the reactive nature of healthcare is a significant barrier to engaging with environmental sustainability.

Charlesworth et al. (2012) found that despite public health registrars' desire to incorporate sustainability into their day-to-day work and despite their emphasis on small achievable outcomes there was still a lack of engagement. They drew conclusions much the same as Anåker et al. (2015) and Dunphy (2014) citing time, demands of the job and a reactive culture as factors that inhibit engagement. Kirk (2002) identified the tensions between the immediate care context, the local environment and the national / international environment nearly 20 years ago, illustrating the point that this debate is not new. However, the lack of action may be an outcome of the budget shortfalls, growing populations and global economic austerity (Burke, Ng and Wolpina, 2014) all of which are contemporary challenges for front line staff. The need to put the patient first is one of the NHS Constitutional values (Department of Health, 2015, p. 5) and wording such as "put the needs of the patients and communities before organisational boundaries" may perpetuate the level of priority assigned to the immediate environment.

Anåker et al. (2015, p. 1886) also found that due to the emotional and physical effort required, nurses were often left with a sense that they did not have "neither the time nor energy to consider environmental health". This is consistent with *attentional resource theory* which details the finite human capacity for attention, implying that attention can be assigned according to priority and immediacy of tasks (Cohen, 2001), therefore in healthcare the priority is the immediate needs of the patients (Charlesworth et al., 2012). This is also consistent with Heidt (2018) who describes the *finite pool of worry* whereby immediate concerns are assigned a higher level of priority. Mitchell (2013) suggests that the success of any change is based on individuals willingness and motivation to act as *change agents.* However, stressful environments whereby healthcare staff are depleted of emotional resilience do not foster willingness and motivation to change. This is countered by Ulrich, Rushton and Grady (2020) who suggest that despite the stresses of contemporary healthcare (such as the Covid-19 global pandemic), many nurses choose to remain and survive (and often thrive). Therefore, if nurses have already demonstrated an ability to adjust to the hardship and emotional labour of caring (Ulrich et al., 2020) then the potential to positively adapt to environmental issues is promising with Riley and Weiss (2015) concluding that resilience can be learned.

A lack of engagement towards environmental sustainability at work has not been found to reflect an individual's personal values at home or in their private lives (Dunphy, 2014). In the Australian study of health professionals, it was apparent that many participants took more environmental action in their private lives than within their professional lives, often separating out their opinions/values depending on the setting (Dunphy, 2014). Bratt et al. (2015) suggest that environmentally significant behaviour is dependent on several factors and certain conditions, they go on to explain that most pro-environmental behaviour has a strong correlation to the perceived

ease of adopting that behaviour. This is supported by Ipsos (2020) who documented a high level of engagement with minor lifestyle changes at home but a reluctance towards major investment (time or money). This can be translated into healthcare practice and considered alongside the perceived ease or difficulty of engaging in a pro-environmental behaviour. Given the emotional and physical pressures within healthcare detailed already the perception of pro-environmental behaviour may be deemed too difficult.

Griffiths (2006) found that participants in a qualitative study on environmental management in the NHS believed pro-environmental decisions were more important within their private lives. This may be due to a lack of control within the workplace of external factors such as cost, convenience and available technology (Bratt et al., 2015). At home there may be more incentives such as: a greater sense of control, provision of the means to engage in pro-environmental behaviour such as local authority recycling (Department for Communities and Local Government, 2014), and personal savings through utility bills (Ofgem, 2016). Dunphy (2014) found that several situational constraints within the workplace were prohibitive of collective action.

Whether at home or at work, Fielding et al. (2014) suggest there needs to be a cognitive, affective and behavioural dimension to enable individuals to engage. The behavioural component is the outcome and for behaviour to manifest there is normally a cognitive and affective component. The cognitive component is when an individual becomes aware of a situation and acquires knowledge of the risks associate with climate change (van der Linden, 2015). Individual cognition is subjective and may lack accuracy in relation to scientific evidence. The affective component is described by Peeters et al. (2019) as an appraisal of the situation and the emotions that manifest. Pro-environmental behaviours at work may be inhibited by both the cognitive and affective components. A lack of knowledge of the negative impacts of care on the environment

may disturb the cognitive component (Grootjans and Newman, 2012), and without knowledge of the harmful effects the affective component cannot be activated.

There are some instances where behaviours can occur without cognitive and affective decisions, for example habits and routines. Verplanken and Whitmarsh (2021) describe how behaviours that have become habitual can become barriers to the adoption of pro-environmental behaviours. This may well be the case within healthcare where habits formation is well documented (Pothoff et al., 2019). Habits are associated with less deliberate thinking and this may offer healthcare staff a 'break' from the cognitive and affective demands of the job (Pothoff et al., 2019).

Peeters et al. (2019) explore the correlation between certain affective responses and the subsequent behaviours that are likely to be exhibited. Emotions such as fear and anger are likely to elicit resistance to change (Peeters et al., 2019). In contrast, emotions such as exhilaration and enthusiasm are likely to lead to positive engagement in a situation and reduce the likelihood of negative emotional responses (Peeters, et al., 2019). This is of relevance to healthcare professionals and how they perceive climate change and environmental sustainability as negative emotions may further perpetuate the lack of engagement and action.

Individual and social barriers / Psychology of Responsibility and Blame

The final theme of this literature review was the notion of social barriers and the externalisation of responsibility for action on climate change. Dunphy (2014) found that one of the most basic barriers was the visibility of environmental sustainability within Australian healthcare organisations. Dunphy's (2014) study participants described the lack of strategic

objectives and absence of explicit reference to environmental issues. This is of interest when reviewing the current NHS England *Vision and Purpose*, which also make no reference to the preservation of local or global environments and only refers to *public resources* (NHS England, 2015). NHS England (2015) go on to explain that *public resources* mean not only money but people, knowledge and skills, which does not sufficiently capture the importance of action on climate change.

While it is important that organisations have clear actions and corporate plans associated with climate change, the absence of such plans could be a convenient excuse for front line staff and their lack of mitigation efforts. This *externalisation of responsibility* is a reoccurring theme amongst the wider general population, and Woods et al. (2018) found that denial of personal responsibility and blaming of large organisations, governments and industry was a common problem. Milgram (1974) explored the concept of obedience and found that subordinates, for example nurses, will simply obey the authoritative figure, such as the healthcare management. This form of dissociative practice infers that *self-exoneration* occurs when individuals free themselves from any fault as they attribute blame to others (Woods et al., 2018). McMillan (2013) balances this and argues that the success of sustainability is dependent on stakeholders at all levels of an organisation working in partnership towards shared goals.

Nordhaus (2015) suggest that when certain individuals, groups or organisations are seen to be avoiding mitigation a concept known as the *free-rider effect* can inhibit the motivation of others. This same concept can also be seen through the *tragedy of the commons* (Hardin, 1968) whereby personal gains take priority and there is a lack of willingness to make any sacrifices because nobody else is acting. Within healthcare the widespread inaction may be self-perpetuating until

the free-rider cycle is broken. Healthcare staff need to be motivated into action for shared sacrifices to be made (Thaller, Fließ and Brudermann, 2020).

It is evident that there are several social barriers to change when it comes to climate change and the need for collective action is a strong message within the literature (Anåker et al., 2015; Dunphy, 2014; McMillan, 2013). However, a key challenge for healthcare is to engender a sense of personal responsibility while recognising the collective benefits of action.

Discussion

From the literature reviewed it is evident that there may be barriers to engagement with climate change and environmental sustainability. There appears to be widespread inaction that is disproportionate to the size and potential influence that the healthcare sector globally could have on environmental sustainability. Authors have highlighted a lack of global thinking and a lack of appreciation for the interconnectedness of local actions and global consequences, often born out of pressure to focus on local care priorities. The findings indicate that there may be a disconnect between the values exhibited at home versus the values exhibited at work and there are certain situational constraints that may prevent healthcare staff from taking their values to work and being ambassadors for environmentally sustainable healthcare. The discontinuation of environmentally unfriendly habits within the workplace may prove difficult all the time there is a stable context and a lack of pro-environmental cues (Porthoff et al., 2019). There is evidence to suggest that social norms and professional paradigms may be blocking the adoption of new ways of thinking and working. Despite the overwhelming evidence of climate change and potent messages urging mitigation there is little acknowledgement of the importance of this topic within healthcare practice.

This literature review illustrates the contextual barriers and situational constraints that exist within healthcare globally and which prevent engagement with sustainable healthcare. These seemingly immovable barriers were reoccurring within many of the themes identified within this review. For example, Dunphy (2014) documented the drive towards targets within Australian healthcare which had developed a culture that was disconnected from environmental values. In addition, the lack of visible environmental concern demonstrated by healthcare organisations

means this is not a high priority amongst staff (Dunphy, 2014). A perceived lack of time to think pro-environmentally when caring for sick patients was also documented by Anåker et al. (2015).

There is a growing body of evidence to support systemic change within UK healthcare as a means of addressing some of these contextual and situational constraints (McGain and Naylor, 2014; de Preux and Rizmie, 2018; Mortimor, Isherwood, Wilkinson and Vaux, 2018). For example, by procuring more sustainable products within healthcare, there is less environmental damage during its production and it is ethically sourced which pays attention to human rights and fair trade (United Nations, 2012). Similarly, NHS England (2020) aim to trial the use of zero emission ambulances within London, along with the installation of a comprehensive charging network. These are just a few examples of ways in which UK healthcare organisations are attempting to address some of the situational constraints.

Despite the move to address many of the structural barriers and situational constraints it is important to recognise the importance of psychology and the need to understand the perspective of those delivering care and services (NHS England, 2020). According to Muñoz (2012) healthcare professionals, and nurses, have a special contribution to make to mitigation of climate change as the largest group of healthcare staff, consuming vast amounts of resources and producing a vast amount of waste. Fitzpatrick (2010) recognises the significant impact that frontline clinical staff could have over healthcare associated climate change through influencing care delivery and the responsible management of resources. Polivka et al. (2012) suggest that a sense of professional responsibility towards climate change can be achieved through education and through continuing education for qualified staff.

Many researchers and educators document the importance of environmental sustainability within undergraduate curricula, for example in: nursing (Richardson et al., 2016); occupational

therapy (Wagman et al., 2020); medicine (Ghandi et al., 2020); and radiology (Peters, Burrows and Jenkins, 2020). However, the education of qualified staff has received less attention and is a key research priority according to Richardson et al. (2015). For any future education for qualified healthcare professionals to be effective it is imperative to understand what healthcare staff think about climate change and environmental sustainability. Without such knowledge, educational initiatives and subsequent service changes may be futile as they fail to frame the subject appropriately, therefore further research within the UK is needed to frame perceptions of staff towards this subject.

Theoretical, Practical and Research Implications

From the literature reviewed there are several key findings. These were grouped into four key implications:

1. The theoretical implications of this literature review are the presence of situational constraints that exist within healthcare. These can inhibit engagement with pro-environmental behaviour (issues such as time, lack of perceived level of priority within busy clinical areas, and lack of control).
2. A further theoretical implication is the presence of psychological barriers. These included a series of strategies that may be used to cope with cognitive dissonance (such as denial, personal exemption and social exemption).
3. From a practical perspective, some of the contextual and situational constraints may be immovable. However, the psychological barriers may represent ‘movable’ barriers and

healthcare organisations may wish to pay special attention to helping staff recognise cognitive dissonance and associated coping strategies.

4. This literature review provides an important baseline of knowledge within the field of environmental psychology and healthcare. However, more research is needed to explore perceptions of frontline staff within the UK.

Limitations

This literature review included research from other healthcare disciplines, but this study is limited because individual search terms were not modified to be inclusive of all professions. Two out of three search terms contained nursing/nurses making the findings biased towards nursing literature. Had the search been repeated with a range of professional titles (such a doctor, radiographer, midwife and occupational therapist) it may have yielded research papers that were more representative of wider healthcare professions. The results of the search may have also been limited by the application of a filter to look for key words within titles only. This may have excluded some articles. Further, research may be needed using a range of professional titles and by searching for key words within the title and abstract.

In addition, many studies were conducted outside of the UK and there it is important to recognise that cultural and organisational differences may not be reflective of UK healthcare setting. Some of the research papers included lacked methodological rigour, which was identified in the critical appraisal process, as a result the findings presented here should be considered with caution and further systematic and robust research is needed.

Conclusion

There is a scarcity of robust literature exploring the perceptions of healthcare staff towards climate change and sustainable healthcare. This review of the literature offers a theoretical insight into the current body of knowledge and illustrates the need for further research, particularly within the UK to explore what front-line staff think about the topic. It has highlighted the situational constraints that exist within healthcare globally along with a range of psychological barriers that are developed to cope with the realities that healthcare is worsening climate change.

It is likely that there will always be contextual barriers and situational constraints to engagement with sustainable healthcare practices however there is potential for systemic changes. For this research the psychological barriers in the UK was the focus and there is a need to assess and fully understand what healthcare staff think to make any meaningful changes to practice.

While research into the psychological barriers is important, it would also be useful to explore levels of engagement in sustainable healthcare campaigns and practices. Little is known and shared about current practices and models of sustainable healthcare and if there are good examples in the UK they need to be shared within the wider academic, clinical and political arenas.

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Appendix 1: Summary of Literature Search

	Nurs* AND Climate Change OR Global Warming	Nurs* AND Sustainab*	Environmental Sustainability AND Health	Total before exclusions applied	Total following exclusions applied
CINAHL	5	0	4	9	6
BNI	5	1	1	7	2
ASSIA	2	1	3	6	4
Medline	3	0	0	3	0
Total=				25	12

Cumulative Nursing and Allied Health Library (CINAHL) – 26th March 2016

1. Nurs* AND climate change OR global warming (1997-2016)
   =93
   Limited to 'Academic Journals
   =65 (Manual search of all titles, 53 excluded)
   =12 (Abstracts read, 7 excluded)
   =5 articles

Authors	**Year**	**Article Title**	**Journal Title**	**Issue (Volume)**	**Pages**	**Include / Exclude**
Anåker, Nilsson, Holmner and Elf.	2015	Nurses Perceptions of Climate and Environmental Issues: a qualitative study	Journal of Advanced Nursing	71 (8)	1883-1891	Include
Richardson, Grose, O'Connor, Bradbury, Kelsey and Dorman.	2015	Nursing Students' attitudes towards sustainability and health care	Nursing Standard	29 (42)	36-41	Include
Polivka, Chaudry and Mac Crawford.	2012	Public Health Nurses' knowledge and attitudes regarding climate change	Environmental Health Perspectives	120 (3)	321-325	Include
Anåker and Elf.	2014	Sustainability in Nursing: a concept analysis.	Scandinavian Journal of Caring Sciences	28 (2)	381-389	Include
Sayre, Rhazi, Carpenter, Hughes,	2010	Climate Change and Human Health: the role of the nurse in confronting the issue.	Nursing Administration Quarterly	34 (4)	334-347	Exclude: not primary research

2. Nurs* AND sustainab* (abstract only)

   =765

Limited to 'Title'
=100
Limited to 'Academic Journals'
=77 (Manual search of titles, 77 excluded)
=0

3. Environmental Sustainability AND Health (abstract only)
   =40 (Manual search of titles, 37 excluded)
   =3 articles

Authors	Year	Article Title	Journal Title	Issue (Volume)	Pages	Include / Exclude
Jamieson, Wicks and Boulding.	2015	Becoming environmentally sustainable in healthcare: an overview	Australian Health Review	39 (4)	417-428	Exclude: not primary research
Harris, Pisa, Talioaga and Vezeau.	2009	Hospitals Going Green: A holistic view of the issue and the critical role of the nurse leader	Holistic Nursing Practice	23 (2)	101-111	Exclude: not primary research
Nichols and Richardson.	2009	Health, climate change and sustainability: a systematic review and thematic analysis of literature	Environmental Health Insights	3	63-88	Exclude, does not focus on attitudes / perceptions

British Nursing Index – 28th March 2016

1. Nurs* AND Climate Change OR Global Warming (peer reviewed, all dates)
   =43 (manual search of all titles, 38 excluded)
   =5 articles

Authors	Year	Article Title	Journal Title	Issue (Vol)	Pages	Include / Exclude
Goodman.	2015	Climate change and ecological public health	Nursing Standard	29 (24)	37-41	Exclude: not primary research
Goodman.	2013	Role of the Nurse in addressing the health effects of climate change	Nursing Standard	27 (35)	49-56	Exclude: not primary research
Aronsson.	2013	How can SCPHN School Nurses contribute to the sustainability agenda?	Community Practitioner	86 (7)	38-40	Exclude: lack of relevance
Munõz.	2012	Reducing the health care sectors carbon footprint - the power of nursing	Workplace Health and Safety	60 (11)	471-474	Exclude: not primary research
Goodman.	2011	The need for a sustainability curriculum in nurse education	Nurse Education Today	31 (8)	733-737	Exclude: not primary research

2. Nurs* AND Sustainab* (title)
   =20 (manual search of titles, 19 excluded)

=1 article

Authors	Year	Article Title	Journal Title	Issue (Vo)	Page s	Include / Exclude
McMillan.	2014	Sustainability: an evolutionary concept analysis	Journal of Advanced Nursing	70 (4)	756-767	Include

3. Environmental sustainability AND health
   =4 (manual search of titles, 3 excluded)
   = 1 article

Authors	Year	Article Title	Journal Title	Issue (Vol)	Page s	Include / Exclude
Dunphy.	2014	Healthcare professionals' perspectives on environmental sustainability	Nursing Ethics	21 (4)	414-425	Include

Applied Social Sciences Index – 28th March 2016

1. Nurs* AND Climate Change OR Global Warming (abstracts and peer reviewed)
   =55 (manual search of titles, 53 excluded)
   =2 articles

Authors	Year	Article Title	Journal Title	Issue (Vol)	Page s	Include / Exclude
Kreitzer.	2009	Environmental leadership and advocacy: a call for whole systems healing	Creative Nursing	15 (4)	196-198	Exclude: not primary research
Kirk.	2002	The impact of globalization and environmental change on health: challenges for nurse education	Nurse Education Today	22 (1)	60-75	Exclude: not primary research

2. Nurs* AND sustainab*
   =259
   Limited to 'Title only'
   =25 (manual search of titles, 24 excluded)
   = 1 article

Authors	Year	Article Title	Journal Title	Issue (Vol)	Page s	Include / Exclude
Richardson.	2016	Including sustainability issues in nurse education: a comparative study of 1st year student nurses' attitudes in 4 EU countries	Nurse Education Today	37 (15)	15-20	Include

3. Environmental Sustainability AND health (abstract)
   =81 (manual search of titles, 78 excluded)
   = 3 articles

Authors	Year	Article Title	Journal Title	Issue (Vol)	Pages	Include / Exclude
Grootjans and Newman.	2013	The relevance of globalisation to nursing: a concept analysis	International Nursing Review	60 (1)	78-85	Include
Charlesworth.	2012	Developing an environmentally sustainable NHS	NSW Public Health Bulletin	23 (1)	27-30	Include
Griffiths.	2006	Environmental sustainability in the National Health Service in England	Public health	120 (7)	609-612	Exclude following CASP review

Medline – 28th March 2016

1. Nurs* AND Climate Change OR Global Warming
   =3324
   Limited to 'Humans' and 'Nursing Journals'
   =19 (manual search of titles, 16 excluded)
   =3 articles

Authors	Year	Article Title	Journal Title	Issue (Vol)	Pages	Include / Exclude
Richardson et al.,	2014	The use of evidence informed sustainability scenarios in the nursing curriculum: development and evaluation of teaching methods	Nurse Education Today	34 (4)	490-493	Exclude: lack of relevance
Adlong and Dietsch.	2015	Nursing and Climate change: an emerging connection	Collegian: The Journal of Royal College of Nursing Australia	22 (1)	19-24	Exclude: not primary research
Fitzpatrick	2010	The impact of healthcare on the environment: improving sustainability in the health service	Nursing Times	106 (9)	18-20	Exclude: not primary research

2. Nurs* AND Sustainab* (title only)
   =61
   Limited to 'Humans' and 'Nursing Journals'
   =23 (manual search of titles, 23 excluded)
   =0

3. Environmental Sustainability AND Health
   =151
   Limited to 'Humans' and 'Nursing Journals'
   =4 (manual search of titles, 23 excluded)
   =0

Appendix 2: Qualitative Research: critical appraisal

	Anåker, Nilsson, Holmner and Elf (2015)	**Dunphy (2014)**	**Griffiths (2006)**
CASP Score (Max. 18)	18/18	15/18	2/18
Include / exclude	Include	Include	Exclude
Comments			Paper lacks methodological detail

Appendix 3: Quantitative Research: critical appraisal

Questions	Polivka, Chaudry and Mac Crawford (2012)	Charlesworth , Ray, Head and Pencheon (2012)	Richardson et al. (2015)	Richardson et al (2016)
Research question and study design				
Was a questionnaire the most appropriate method?	Yes	Yes	Yes	Yes
Validity and reliability				
Have claims for validity been made, and are they justified? (Is there evidence that the instrument measures what it sets out to measure?)	Yes Yes	No No	Yes Yes	Yes Yes
Have claims for reliability been made, and are they justified? (Is there evidence that the questionnaire provides stable responses over time and between researchers?)	Yes No	No No	No No	Yes Yes
Format				
Are example questions provided?	Yes	No	Yes	Yes
Did the questions make sense, and could the participants in the sample understand them? Were any questions ambiguous or overly complicated?	Yes No	Unclear Unclear	Yes No	Yes No
Piloting				
Are details given about the piloting undertaken?	Not undertaken	Yes	Not undertaken	Yes
Was the questionnaire adequately piloted in terms of the method and means of administration, on people who were representative of the study population?	No – but this was highlighted as a limitation of the study	Yes	No	Yes
Sampling, Distribution, administration and response				
Was the method of distribution and administration reported?	Yes	Yes	Yes	Yes
Were the response rates reported, including details of participants who were unsuitable for the research or refused to take part?	Yes	Yes	Yes	No

Have any potential response biases been discussed?	Yes	No	No	No
Coding and analysis				
What sort of analysis was carried out and was this appropriate? (e.g. correct statistical tests for quantitative answers, qualitative analysis for open ended questions)	Descriptive analysis. Yes	Comparative: mean, SD, CI, p-value. Yes	Non-parametric. Yes	PCA ANOVA Yes
Results				
Were all relevant data reported?	Yes	Unclear due to lack of reporting on the questions asked	Yes	Yes
Are quantitative results definitive (significant), and are relevant non-significant results also reported?	Yes	Yes	Yes	Yes
Have qualitative results been adequately interpreted (e.g. using an explicit theoretical framework), and have any quotes been properly justified and contextualized?	Study mentions results from a focus group but this was part of a larger study.	Yes – but it does not report which framework.	N/A	N/A
Conclusions and discussion				
Have the researchers drawn an appropriate link between the data and their conclusions?	Yes	Yes	Yes	Yes
Have the findings been placed within the wider body of knowledge in the field (e.g. via a comprehensive literature review), and are any recommendations justified?	Yes	Limited integration of theory. Recommendations explained.	Yes	Yes

British Journal of Medicine (2004)

Appendix 4: concept analysis – critical appraisal

Questions	**Anåker and Elf (2014)**	**McMillan (2014)**	**Grootjans and Newman (2012)**
1. Question. Did the paper address a clear research question and if so, what was it? Were complex terms such as 'hospital at home', 'private finance' defined clearly and unambiguously?	Yes	Yes	Yes
2. Design. What was the study design and was this appropriate to the research question?	Concept Analysis Yes – Walker and Avant	Concept Analysis Yes - Walker and Avant	Concept Analysis Yes - Rodgers
3. Funding. Who funded the study and what was their perspective?	No funding	No funding	No funding
4. Resource system. In this study, from whom was the innovation said to come?	NA	NA	NA
5. Innovation. What was the nature of the innovation?	NA	NA	NA
6. Context. What was the context of the study? Was this sufficiently well described so that the findings could be related to other settings?	Yes	Yes	Yes
7. User system. Who was receiving the innovation (or to whom was it marketed)?	NA	NA	NA
8.Dissemination mechanism. What (if any) were the elements of the active dissemination process and how did they interact?	NA	NA	NA
9. Implementation mechanism. What (if any) were the elements of the active implementation process and how did they interact?	NA	NA	NA
10. Sampling. Did the researchers include enough **cases**/settings/observations so that conceptual rather than statistical generalisations could be made?	Yes	Yes	Yes
11. Data collection. Was the data collection process systematic, thorough and auditable?	Yes	Yes	No – lack of detail on the papers included for review.
12. Data analysis. Were data analysed systematically and rigorously? Were sufficient data presented? How were disconfirming observations dealt with?	Systematic and Rigorous	Systematic and Rigorous	Systematic and Rigorous
13. Results. What were the main results and in what way are they surprising, interesting, or suspect? Were there any unintended consequences and if so, what were they?	Interesting	Interesting	Interesting
14. Conclusions. Did the authors draw a clear link between data and explanation (theory)? If not, what were the limitations of their theoretical analysis?	Yes	Yes	Yes
15. Reflexivity. Were the authors' positions and roles clearly explained and the resulting biases considered? Ethics. Are there any ethical reservations about the study?	Yes No	Yes No	Yes No

Chapter 3

Small-Scale Research Project:

Exploring the psychological perspectives exhibited towards climate change and sustainable healthcare: examples from the United Kingdom

Abstract

Introduction

Climate change poses a serious threat to both natural and human systems. The need to reduce carbon emissions means that all aspects of industry, including the healthcare sector, are having to be more sustainable. The healthcare sector in the United Kingdom is the largest carbon emitter due to the size and scale of services offered. Healthcare staff are at the forefront of creating a more sustainable healthcare system yet widespread inaction exists. The literature suggests that inaction may be caused by contextual barriers or situational constraints such as time and money, and psychological constraints such as denial or avoidance, but much of this research is from outside of the UK. This research aimed to explore the psychological perceptions of UK healthcare staff on climate change and sustainable healthcare.

Method

Fifteen participants from the United Kingdom, including clinical and non-clinical staff were recruited from a national sample to take part in an online qualitative questionnaire. The questionnaire explored not only participants perceptions of climate change but also the attitudes and behaviours witnessed in others towards climate change and sustainable healthcare.

Results

The findings were consistent with previous literature, indicating a complex series of psychological coping strategies used to deal with harmful realities of climate change, resulting in a state of moral disengagement. In addition to this the research revealed those who were morally

engaged, some participants were actively participating is sustainable healthcare, but some were unsure of what actions they could take.

Discussion

The findings were linked to three value types: egoists, altruists and biospherists, to explore which value types were acting on climate change. Research to date has focussed on those who are morally disengaged (egoists) but this research advocates exploring those who morally engaged but not acting (altruists) in more depth.

Conclusion

This research provides a useful insight into UK healthcare staff perceptions of climate change and global warming. It has affirmed that the themes from international literature are also present in the UK, but it also adds a new insight proposing that further research on the morally engaged is needed.

Introduction

According to the Intergovernmental Panel on Climate Change (IPCC, 2014) the thirty-year period between 1982 and 2012 recorded the warmest surface temperatures in the Northern hemisphere. The increase in average atmospheric and oceanic temperatures have been strongly linked to human activity and growing industrial processes since the industrial revolution and is known today as Anthropogenic Global Warming (AGW) or more commonly as climate change. The rise in global temperature is negatively impacting both natural and human systems illustrating the fragility of ecosystems and the sensitivity to temperature change (IPCC, 2014).

Environmental effects of climate change are widespread and can be seen in numerous examples across the globe. Increased average temperatures are melting polar ice sheets (Deconto and Pollard, 2016), glacial regions (Marzeion, Cogley, Richter and Parkes, 2014) and permafrost (Sheng et al., 2004) all of which are contributing to rising sea levels (Dangendorf, 2016). Extreme weather events are all too common; examples range from extreme heat in Russia in 2010 (Dole et al., 2011) to severe precipitation in India in 2013 which resulted in more than 5800 deaths (Singh et al., 2014). As oceans absorb Carbon Dioxide (CO_2) and heat from the atmosphere they are becoming warm, acidic and low in oxygen concentration, all of which is harmful to aquatic life (Melillo, Richmond and Yohe, 2014).

The environmental effects of climate change and the impact on human health are inextricably linked (Vardoulakis and Heaviside, 2012). The IPCC (2014) infer that those who are most vulnerable in developing countries (through poor housing, lack of medical care, lack of food and water) will be the ones who suffer most adversity because of climate change. However, this does not mean that developed countries are free from the effects of climate change, with the United

States (US) experiencing hurricane threats with increasing frequency and magnitude (Grinsted, 2013), while the United Kingdom (UK) experiences serious air quality issues such as the 2003 photochemical smog episode, which was caused by extreme temperatures and air pollutants (DEFRA, 2007). The health effects of air pollution have not been fully quantified but there is evidence to suggest an adverse connection to respiratory morbidity and mortality (Jerrett, Burnett and Pope, 2009). Therefore, the quality of human health and wellbeing in the future is dependent on the stability of the climate and environment.

The need for effective decision making and coherent mitigation strategies at all levels is needed to reduce carbon emissions (Watts et al., 2015). If action is not taken, the long-term risks to natural and human systems will be extreme and irreversible (IPCC, 2014). The COP21 Paris Agreement (European Commission, 2016) suggests that temperature increase should be limited to two degrees relative to pre-industrial levels. However, to achieve this individuals, communities, organisations and governments need to cooperate and take substantial and collective action (Watts et al., 2015).

The global call for mitigation on climate change meant the National Health Service (NHS) in the UK developed a Sustainable Development Unit (SDU, 2017a) tasked with responsibility to reduce the carbon footprint associated with healthcare. The NHS delivers healthcare to the 56 million people living in the England therefore it is unsurprising that it is the largest carbon emitter in the country (ONS, 2020). The NHS has the potential to reduce its carbon footprint through initiatives such as the *Health Outcomes Travel Tool* (SDU, 2017b) and the *Sustainable Development Management Plan* (SDU, 2017c), creating more sustainable models of care which reduce waste, re-uses where possible and recycles (SDU, 2017d).

Despite a plethora of guidance documents from organisations like the SDU (2017c) there is a lack of literature exploring perceptions of the people who are at the frontline of healthcare within the UK. A literature review performed by Griggs, Fernandez and Callanan (2017) revealed a discreet selection of primary research papers that have examined nurses and other front-line healthcare staff perceptions of climate change and environmental sustainability. Most of the primary research had been conducted in countries other than the UK and very few focused-on nurses alone. While the literature illuminated some interesting themes, the small number of research articles meant that the findings did not provide confidence on which to base further research.

Griggs et al. (2017) identified 6 key themes:

1. Historically, the word sustainability was associated with money and service longevity. Although an emerging focus on ecology is documented within nursing literature there remains confusion as linguistic camouflage hides the true meaning (Anåker and Elf, 2014).

2. There was a strong sense of disconnect between local actions and global consequences with many healthcare professionals demonstrating a moral disengagement to the effects of climate change on developing countries (Grootjans and Newman, 2013).

3. Many psychological barriers to action were identified, including cognitive dissonance, denial, fatalism and bystander effect (Dunphy, 2014).

4. Social identity and social norms revealed a strong link between the desire to be socially accepted and the widespread silence on the topic, with fear of being ostracised or entering a politically emotive topic cited as a major barrier to engagement (Polivka, Chaudry and Mac Crawford, 2012).

5. The level of priority assigned by healthcare staff to sustainable healthcare was suggestive that due to the emotional demands of the job, staff perceived that they had little emotional resilience left for environmental issues (Dunphy, 2014).

6. Individual and social barriers were associated with an externalisation of blame, with lack of leadership, inaction of others and self-exoneration, all identified as reasons for a lack of engagement (Anåker, Nilsson, Holmner and Elf, 2015).

From the literature reviewed (Griggs et al., 2017) there are several reasons cited as to why nurses and other front-line staff do not engage in environmentally sustainable behaviour, the most obvious structural and contextual barriers being time and lack of perceived level of priority within busy clinical areas. It is unlikely that these physical barriers will change in the future given the increasing UK population and the respective budget cuts (Full Fact, 2020). Therefore, it is important to understand the perceptual or psychological barriers in more depth as this is an aspect that may be targeted more successfully by change initiatives. This is supported by the *American Psychological Association's* task force on the *Interface between Psychology and Global Climate Change*, who recommend further research exploring psychological barriers (Swim et al., 2009). The literature to date has revealed a series of irrational or maladaptive strategies that may be used to cope with the cognitive dissonance created by climate change such as denial, personal exemption and social exemption (Griggs et al., 2017). These psychological mechanisms or *mental manoeuvres* may be tactics to reduce the dissonance and create a state of cognitive consonance, and the outcome is widespread inaction towards healthcare associated climate change (Festinger, 1957). Therefore, it is essential for healthcare managers and policymakers to understand what staff think and how they behave towards climate change and sustainable healthcare to ensure that policy and initiatives are tailored to combat some of the maladaptive psychological mechanisms.

Aims

The aim of this small-scale research project was to explore perceptions of nurses and front-line healthcare clinicians, managers and estates / infrastructure staff towards climate change and environmental sustainability within the UK. The methodological approach taken was one of critical realism, embracing both an ontological position whereby a real world exists but also an epistemological acceptance that the way the world is interpreted is highly subjective (Johnson and Gray, 2010). This research forms the first phase of an exploratory sequential design and provides qualitative data on healthcare staff perceptions of climate change and sustainable healthcare. This stage was deductive as it was designed to test the findings of the literature review (Nastasi, Hitchcock and Brown, 2010).

The aims of this small-scale research project were to:

1. Explore perceptions of nurses and front-line healthcare clinicians, managers and estates / infrastructure staff towards climate change and environmental sustainability within the UK.
2. To explore if the themes from the literature review (Griggs et al., 2017) were present in a small sample of UK healthcare staff.

Background

An updated literature search was performed to check if any new material had been published since the original literature review was completed in early 2016 (Griggs et al., 2017). Five databases (CINAHL, ASSIA, BNI, Internurse and Medline) were re-examined using the original search phrases and parameters (nurs* AND climate change OR global warming; environmental sustainability AND health; nurs* AND sustainab*). There were several articles published during this period and a clear majority were discussion papers (Goodman, 2016; Anderko, Schenk, Huffling and Chalupka, 2017). One research article was added to the existing body of literature, which was a mixed method study by Patrick and Kingsley (2016) published shortly after the literature review was conducted.

Patrick and Kingsley (2016) offer a robust mixed method study examining health promotion and environmental sustainability. The paper included the perspectives of health professionals delivering health promotion in Australia. Patrick and Kingsley (2016) found that 49% of their sample: considered environmental sustainability a low priority; identified a lack of leadership; and thought that new clinical initiatives were driven by financial targets. This is consistent with the findings of Griggs et al. (2017) and despite this useful addition to the growing body of literature there remains a lack of quality primary research papers on this topic, strengthening and justifying the need for further research within this field.

Values

It is important to recognise the significance of personal values and the link this may have to attitudes and behaviours towards sustainable healthcare. Schwartz (1992, p. 21) defines a value

as “a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity”. Stern (2000) and Stern and Dietz (1994) found that this construct can offer valuable insight into predicting beliefs and behavioural intentions. Because of this, there has been a great deal of interest within the field of environmental psychology exploring the causal effect of values on behaviours (de Groot and Steg, 2008; de Groot and Steg, 2009; Schultz and Zelezny, 1998; Stern and Dietz, 1994). According to Hitlin and Allyn Piliavin (2004) research into values has come in and out of fashion since the 1990s however the work of Schwartz appears to be a strong and consistent theme, perhaps indicating the value of his research and publications. Therefore, much of the research on values today is linked in some way to the Schwartz’ seminal work.

Merchant (1992) reviewed the values-based research of the 1970s and conceptualised three basic value categories that link to environmental concern: homocentric (values focussed on other people); eco-centric (values focused on non-human species); and ego-centric (values focussed on the self). Stern and Dietz’ (1994) early work identified three value types, egoist, altruist and biospherist, that have striking similarities to Merchant’s (1992) findings.

Egoist values may mean that judgements and decisions are made based on the cost and benefit to the individual (de Groot and Steg, 2008). Stern et al. (1993) describes egoistic individuals as those who prioritise self-interest and this is linked to what Schwartz (1992) referred to as self-enhancement. Altruistic values often have a social focus and decisions are often made based on the perceived cost and benefit to others (de Groot and Steg, 2008). Altruists often prioritise community or societal interest and human welfare in general over their own interests (Stern et al., 1993) much like what Schwartz (1992) referred to as conservation and openness to change. Biospheric value orientations are linked to self-transcendence (Schwartz, 1992) a deep

ecological connection like that described by Devall and Sessions (1985) as biocentric egalitarianism. De Groot and Steg (2008) add to this indicating that biospheric decisions are often linked to the cost and benefit to the wider eco-system. Stern et al. (1993) identified these three value types more than 20 years ago. Since that time, they have consistently applied their theory in a range of research settings and have found consistent empirical support (Stern et al., 1993; Stern, Dietz and Guagnano, 1995; Dietz, Stern and Guagnano, 1998).

Method

The research detailed here forms phase two of the exploratory sequential design. This phase sought to collect rich qualitative data from a small number of participants to explore their perceptions of climate change and sustainable healthcare.

Design

An online qualitative questionnaire was used to collect the data. This method was chosen as it allowed qualitative data collection from a national sample, removing issues of time, logistics, travel and resources. The disadvantages of online questionnaires are well documented, such as a low response rate, abandonment of questionnaire, passive approach, time to complete, and motivation to take part (Sue and Ritter, 2007). In addition, Wright (2005) cautions that there is no guarantee that the content of responses is accurate. According to Wright (2005) the advantages of questionnaires include the ability to access a wide target audience in a small space of time and at relatively minimal cost. This method was aligned to the concept of sustainability (low cost / travel / resource) therefore seemed to be morally and ethically appropriate for this research. In addition, interviewer biases or influences were reduced by opting for self-completion rather than a face-to-face method of data collection (Jones and Rattray, 2010).

According to Rose (2014) there were over 15 million users of *Twitter* in the UK in 2014, of which 80% were using a smartphone to access social media. According to Ferguson (2013) there has been an increased engagement with Twitter amongst healthcare professionals as they use it to network, share ideas and promote evidence-based practice. Moorley and Chinn (2016)

advocate the use of social media suggesting it is a useful tool for modern nursing leadership but there is a growing body of evidence that supports the use of Twitter for health-related research questions. Finfgeld-Connett (2015) document that much of the research through Twitter to date has been large-scale studies and many of these encountered significant challenges in data management. Therefore, Twitter may be better suited to small-scale projects, such as this one, due to the ease of access to the free analytics tool (Finfgeld-Connett, 2015). Therefore, the high level of Twitter engagement by health professionals influenced choices around data collection within this study, meaning a potentially diverse population can be accessed with relative ease.

Questionnaire

A Bristol Online Survey (BOS, 2017) was created consisting of 13 closed and 17 open questions (Appendix 5). Closed questions gathered baseline characteristics regarding geographical location, role, and consent to take part, they were simple yes / no questions or selection from a drop-down menu. The open-ended questions allowed participants to articulate a richer and fuller perspective, freedom to elaborate and a degree of spontaneity in their responses (Polit and Tatano Beck, 2008). The questions were created based on the themes of the literature review (Griggs et al., 2017). For example: please describe what the term sustainable healthcare means to you; do you feel comfortable taking about climate change with your colleagues (Appendix 5). A closed webpage was created with the participant information sheet, detailing the purpose of the project, eligibility to take part, what was involved, what would happen with the findings and the contact details of the researcher. The BOS was advertised via a *Twitter* account specifically set up to network with nurses and health professionals. Twitter was selected over other social media platforms such as Facebook because it is a far more public form of social media and privacy

settings are rarely applied, which according to Chinn (2014) is a real strength of Twitter as it provides the ability to network globally. Advertising the study in this way was non-intrusive and allowed the participants to be proactive in choosing to take part (Sue and Ritter, 2007). No data were collected publicly via Twitter and it was only used to advertise the study, interested participants were able to click on a secure link which then took them to the closed webpage where they could read the participant information. If they wanted to proceed they selected another hyperlink which routed them to the secure BOS.

Being active in social media is considered a key requirement of success according to Kaplan and Haenlein (2010) therefore daily Tweets were used to promote the survey (Appendix 6). Over the 29-day period that the BOS was live online it achieved an average of 144 Twitter impressions per day[1]. A total of 4200 impressions were made during the live BOS period, illustrating the efficacy of social media in reaching a far broader audience that traditional methods and the impression to completion ratio was 280:1. In addition to the Tweets made to promote the BOS several other organisations and individuals retweeted which maintained a good level of activity throughout the live survey period.

Before the questionnaire was administered it was sent to a few experts within the field to check for content validity (Jones and Rattray, 2010). The purpose of this stage was to ensure questions were clear and easily understood. One expert was from a national organisation involved in sustainable healthcare, the other expert was from a psychology and research background. Valuable feedback was gained on the structure of the survey, mainly around the need to allow participants time to settle into the questionnaire before asking about climate change. The experts

[1] An 'impression' is when a tweet has been delivered to the Twitter stream of a particular account.

believed these questions may put participants off or may seem too political, and they recommended a series of questions that built up to the topic. Therefore, some minor amendments were made, and the climate change questions were pushed further back in the sequence.

One disadvantage of a written questionnaire administered by post or internet is that the participant is unable to seek clarification, therefore clarity and comprehensibility of questions was of utmost importance (McKenna, Hasson and Keeney, 2010). Therefore, a pilot survey was created to test the whole process. A link was added to Twitter inviting participants to take part, this link took participants to the closed webpage where they could read the participant information sheet. Once the participant was satisfied with that information, they could then access a link to take part in the survey. Two participants took part in the pilot (a senior nurse and a consultant anaesthetist) and provided extensive feedback, all of which was positive, therefore no changes were made to the final survey. Because of this the two pilot participants were included in the final data set.

Participants and Recruitment

The inclusion criteria were that participants had to: be working in the UK healthcare sector (public / private / charitable); be involved or be willing to share thoughts on climate change and sustainable healthcare (in a clinical / managerial / estates and infrastructure role); be willing to share their own attitudes and behaviours; and be willing to share attitudes and behaviours observed in others towards climate change and sustainable healthcare.

Non-probability sampling was used to access participants and maximise the richness of information gathered (Polit and Tatano Beck, 2008). Purposive sampling was utilised to meet the inclusion criteria which according to Polit and Tatano Beck (2008) is a commonly used method of

sampling in qualitative studies. Patton's (2002) classification of purposive sampling was utilised, and o*perational construct sampling* was used to select participants who would represent real world or operational examples, this is in line with the objectives of the research to gather typical views on climate change and sustainable healthcare. According to Procter, Allan and Lacey (2010) qualitative sample size is often determined by data saturation, whereby data are collected until no new themes or perspectives emerge. Due to the quality and depth of the responses data saturation occurred after 13 responses over a one-month period in February 2017, which combined with the participants from the pilot resulted in a total of 15. There were no incomplete surveys therefore all 15 responses could be included in the final data analysis.

From the outset the reality of self-selection bias was acknowledged, and there was an awareness that those who chose to take part may be more interested in climate change and sustainable healthcare (Wright, 2005). In addition, non-responder bias also posed a risk whereby the views of those who chose not to take part were not included (Jones and Rattray, 2010). However, to gather an operational sample care was taken to promote the survey amongst the general nursing and healthcare profession, and not just those working with existing links to sustainable healthcare initiatives and organisations.

During data collection an incentive was offered, a £10 high street voucher was offered to the first 10 participants to take part in recognition of their time. Wright (2005) suggests that material incentives are effective and more credible than incentives such as a prize draw and Göritz (2006) found that incentives can increase participation by up to 19% and reduced drop out by 27%.

A total of 15 participants completed the online questionnaire (N=15) and the characteristics can be seen in Table 6. The sample included a range of clinical and non-clinical staff, however nurses, from band five to eight made up much of the sample which may be representative of the

proportion of nurses in practice compared to other healthcare roles. Other roles included: a communications manager, a patient safety manager, treasurer, health visitor, community midwife, operating department practitioner, public health nurse, ward matron and specialist consultant anaesthetist. There were no responses from participants within an estates or infrastructure role. Most participants were in the 41-50 years of age category although there was participation from all age groups. Participants had a range of years working in healthcare with the majority having more than 20 years of experience. Participants were working mainly in the public sector however one was from the charitable sector and two from the private sector. Participants were from a range of geographical regions, but the South East of England was the most prominent.

Table 6

Participants Characteristics

Years in Healthcare	**< 5**	**6-10**	**11-15**	**16-20**	**>20**
N=15	3 (20%)	1 (6.7%)	3 (20%)	3 (20%)	5 (33.3%)

Geographical Region	**North East**	**East of England**	**London**	**South West**	**South East**
N=15	2 (13.4%)	1 (6.7%)	1 (6.7%)	2 (13.4%)	9 (59.8%)

Participant Age	**21-30**	**31-40**	**41-50**	**51-60**	**>60**
N=15	2 (13.4%)	4 (26.6%)	6 (40%)	3 (20%)	0

Nurse Band	**Band 5**	**Band 6**	**Band 7**	**Band 8+**
N=11	2 (18.2%)	3 (27.3%)	4 (36.3%)	2 (18.2%)

Setting	**Private**	**Public**	**Charitable**
N=15	3 (20%)	11 (73.3%)	1 (6.7%)

Ethics

Ethical approval was sought from Canterbury Christ Church University ethics committee and an ethical compliance letter was issued in January 2017. The study was compliant with the British Psychological Society's (2014) *Code of Human Research Ethics* and the British Psychological Society's (2017) *Ethics Guidelines for Internet-mediated Research*. The online questionnaire allowed participants to take part freely and of their own will. Participants were fully informed of the study via a closed website which contained the participant information approved by the University ethics committee. Consent was built into the BOS survey and consisted of 4 questions (Q3-6) approved by the University ethics committee, and the survey was constructed in a way that if participants did not agree at all aspects of consent then they could not proceed. All

data collected was stored securely in a password protected personal drive. Participants were also given the option to receive a summary report within 1 year.

Analysis

Commitment and rigour according to Yardley (2000) are essential components of good qualitative research and can be achieved through in-depth engagement with the topic, methodological competence and the breadth and depth of data analysis. Therefore, this section aims to illustrate how data were analysed using Braun and Clarke's (2006) six stage approach to thematic analysis. According to Kuckartz (2014) thematic analysis is a fundamental means of analysing qualitative data, it is flexible enough to be used across several different theoretical and epistemological approaches yet can assist researchers to explore and make sense of rich and complex data.

According to Braun and Clarke (2006) it is important that researchers select a method that is appropriate to the research problem or question, therefore other methods of data analysis were considered. Grounded Theory as a means of data analysis was explored, however this approach required analysis to be directed towards new theory development as it is an inductive process (Holloway and Todres, 2010b). In this instance, theory from the literature review does exist, therefore a deductive approach was taken to test that existing theory. Interpretive Phenomenological Analysis (IPA) was also explored as a method of data analysis that seeks to understand everyday reality and what life is like (Holloway and Todres, 2010b). IPA requires detailed accounts from individuals who are articulate and able to describe a situation in detail (Holloway and Todres, 2010b), however the present study sought to provide a rich thematic description of the entire data set, which according to Braun and Clarke (2006) is ideal when

investigating an under-researched area. The strength of thematic analysis within this study is that it takes a flexible approach that explores perceptions of climate change and sustainable healthcare.

The six phases of thematic analysis were implemented according to Braun and Clarke's guidance (2006) in the same way as described in chapter two of this portfolio. The differences at this stage were that the qualitative data were already available within BOS and no transcription was required. During the second phase of analysis, which involved generating initial codes, the codes were largely driven by interesting features within the data that were linked to the *sensitizing concepts* previously found within the literature review (Griggs et al., 2017). The codes were assigned to features that were both important in relation existing theory – not prevalence.

Quality Assurance and Credibility

Reliability and validity in qualitative data analysis is an important topic for consideration and according to Bazeley (2010) there has been extensive debate around what constitutes reliability in qualitative data analysis. Bazeley (2010) goes on to suggest that one method of enhancing reliability is to perform inter-rater comparison whereby transparency and consistency of coding between two or more coders is compared. However, Yardley (2000) provides an interesting critique of inter-rater reliability within qualitative data analysis, suggesting that it is simply an interpretation agreed by two people. The fact remains that it is a subjective interpretation and could never be reliably applied to another data set. Yardley (2000) goes on to suggest that application of coding schemes and rules is not only meaningless but also highly restrictive of the creative and interpretive process. However, Low (2007, p. 83) advocates the use of inter-rater techniques to enhance "consistency, reliability and validity" during the analysis process.

One way to enhance the reliability of the coding process is to use a Cohen Kappa Coefficient test in SPSS (Field, 2018). The inter-rater reliability was performed by providing a sample of BOS responses to the first supervisor. The raw survey data were provided with a list of possible codes. After coding was performed the results were entered into SPSS and a Cohen Kappa Coefficient was run to determine the level of agreement. Of the three sample surveys the results were k = .723 indicating a substantial agreement between the raters.

Patton (2002) discusses the risks associated with researcher subjectivity and the difficulty in achieving objectivity and settles on *fairness* as a concept by which to judge credibility. He goes on to suggest that fairness within qualitative data is about balance, presenting both sides of a case, whereby the researcher takes on an adversarial role allowing the reader to draw conclusions. Therefore, while the analysis was deductive and led by sensitizing concepts previously found within the literature review, the results will be presented in an open manner, attempting to provide a balanced insight. Transparency and responsibility are key markers of a researcher's enactment with process-oriented quality assurance (Reynolds et al., 2011).

According to Tufford and Newman (2010) bracketing within qualitative research is a process whereby the researcher identifies and sets aside their preconceptions and develops an awareness of how those preconceptions may influence a research project. They go on to explain that bracketing is an important means of enhancing reflexivity and acuity within the research process. Within this project bracketing was performed via a few different methods. An initial bracketing exercise detailed below was conducted to allow existing preconceptions to surface (Rolls and Relf, 2006), monthly supervision meetings were also used as a means of following up these preconceptions. This was supported on an on-going basis by writing theoretical memos during the data collection and analysis (Ahern, 1999), and writing a reflective journal which

according to Reynolds et al. (2011) demonstrates the researcher's awareness of the principles and values associated with quality assurance in qualitative research.

My experience as a nurse within the NHS means that I am approaching this research with an appreciation of what life is like for nurses working in the UK healthcare sector. I believe this emic position (Holloway and Todres, 2010a) is a strength of the research as I can appreciate the stresses, pressures and sense of duty and responsibility that are experienced by nurses daily. I am realistic in my expectations of nurses and their engagement with sustainable healthcare and I appreciate that sustainable healthcare may not be a priority for nurses working in the UK. I hope that participants will see me as a credible researcher because of my background in nursing and I hope that the small act of talking about climate change is enough to get people thinking about the small actions they can take. I hope to maintain objectivity throughout the process and the fact that I am slightly removed from clinical practice will help with an etic approach (Holloway and Todres, 2010a).

My feelings towards climate change are powerful yet pragmatic and I recognise that these will inevitably affect this research project. These powerful feelings are being harnessed to motivate me to complete research on the topic. I can see that there is a gap in knowledge and all the time that gap exists there is a risk that public money is being misappropriated on aspects of sustainable healthcare that are not fully understood. I would like to bridge that gap and feel that my personal contribution could have real value in the future. This is also countered by my pragmatism and realism that for nurses in practice this subject may hold little importance when compared to the challenges of their day-to-day work. The risk associated with my powerful feelings towards climate change is that I do not listen to participants and I do not hear what they are saying. I am

aware of this risk and as a result I have attempted to take necessary steps to ensure quality and credibility that are discussed over the following sections.

My experience as a researcher has been at a very basic level in undergraduate and postgraduate studies and mainly associated with a constructivist paradigm. My lack of diverse research experience may limit this project as I will be learning on the job and my lack of experience using different methodologies may inhibit my ability to think beyond my qualitative background. However, the benefits may include my eagerness to learn and develop new skills as a researcher, I am keen to use this opportunity to gain not only intellectual wealth but also technical skills as a researcher. From a methodological perspective I can approach this research with no pre-suppositions, and I am aware that I may not get the process right initially but through reflection, open-mindedness and honesty I am hoping to become a more competent researcher. My supervisors have different methodological backgrounds, and I am hoping this will balance my perspective and allow me to explore quantitative and mixed method approaches, this on-going peer review process is seen as marker of quality in qualitative research (Reynolds et al., 2011).

Findings

A total of 28 initial codes were assigned to the data during the first phase of data analysis (Table 7). This initial theoretical analysis was deductive and driven by the specific research question which was to explore the findings of the literature review (Braun and Clarke, 2006). A visual map of initial codes can be found in Appendix 7 which illustrates Braun and Clarke's (2006) phases two to five from initial coding to naming and refining themes. This resulted in 11 themes (Table 7): responsibility; control and power; moral disengagement; social norms; emotional priority; home versus work; money; evidence; figure heads; scepticism; and minority, and these are explored individually in more detail over the following pages. The use of italicised text will identify the direct participant quotes along with their respective number (e.g., P1 / P2 / P3....).

From the 15 responses there were four participants who were concerned about the environment and actively engaged with pro-environmental behaviour. These participants documented a deep connection to environment "*I feel we are part of the environment and it feels destructive to have human activity which promotes resource depletion and climate change…this generation feel very disconnected from nature and doesn't have the strong pull to be part of the earth in the way other cultures or previous generations would have done"* (P7).

All remaining 11 participants appeared to be concerned about the environment but not actively engaged, all acknowledging that climate change exists and that humans have had an influence. Many of these participants demonstrated a concern for the future but a lack of confidence in the actions they could take. "*I really want to understand how to do something about this, what actions can be driven from ward level and what I need to do'… 'Good ideas and cultural norms start with a minority who had a vision"* (P9).

Table 7

Overarching themes and individual codes

Theme	Codes
Responsibility	**Champions:** individuals witnessing positive behaviour in others, keen, positive, others willing to change and act, questioning and enquiring, adaptive, 'lone rangers'. **Responsibility:** personal willingness to change and act, lead by example, talk about it, champion initiatives. **Morality:** personal and societal duty, obligation to future generations, protecting the NHS, protecting the planet, **Public versus private:** different levels of engagement, private sector more careful with resources, public sector workers not paying the bills.
Minority and Marginalised	**Minority:** feeling marginalised, alone, everything is a fight, people want to challenge, fear of conflict, cannot rely on colleagues, emotive topic.
Control and Power	**Powerless:** disempowered, frightened, overwhelmed, want to act but don't know where to start. **Control:** no control at work, no autonomy, removed from decision making, helplessness. **Environment:** infrastructure issues, old hospitals, old equipment, poor design. **Policy:** inhibiting logic, hampering judgement, sustainable transformation plans.
Home versus Work	**Home:** control, vested interest, incentives, choice, family on board, investment. **Work:** lack of incentives, no information about costs, no reward, initiatives quashed, easiest option taken, not me paying the bills. **Waste:** equipment, energy, water, heat, food, money, treatments, mismanagement. **Agency:** attempts to be eco and manage waste are thwarted by agency staff.
Moral Disengagement	**Disconnect:** local actions versus global consequences, what does this have to do with me, I can't change the world, I don't need to worry about it, nothing I can do. **Lack of care:** contempt, denial, frustration, dismissive, lethargy, pointless, selfish.
Social Norms	**Comfort:** lifestyle, holidays, cars, ease of living, social norms. **Consumption:** convenience, no thought for the future, casualness, taken for granted, throw away, busy lives. **Hypocrisy:** people say one thing but do another, not practising what they preach.
Emotional Priority	**Emotional Labour:** too tired, no energy, nothing left to give, burnt out. **Priority:** can't do everything, patient comes first, too busy, no time, demands of job.
Money	**Cost:** no money, cutbacks, money is primary objective, suitability and efficiency driving choices. **Investment:** needed – but at what cost, long term benefits, where does the money come from. **Holism:** considering all aspects – cost / ecology / economy / resources.
Evidence	**Evidence:** lack of believable evidence and experts, sense of uncertainty, don't know enough. **Experts:** who are the experts, individuals have no authority on the topic, not qualified to discuss.
Figureheads	**Politicians / Government:** scepticism, denial, Trump (US), China, Brazil. **Leadership:** no leadership, no reward, no targets or incentives, only criticism.
Scepticism	**Scepticism:** lip service, ticking the 'green box', natural cycle, it all ends up in the landfill, where does the recycling go?

Responsibility

A sense of responsibility was mentioned by 13 out of 15 participants and a total of 37 times throughout the entire data set. This code was associated with a willingness to act along with a sense of personal and societal responsibility. This was a new insight and not aligned to the findings of Griggs et al. (2017). Participants described leading by example, talking about climate change and trying to implement local sustainable healthcare initiatives. "*I do this regularly, and work to live an example which encourages questions to provide opportunities to have conversations about it"* (P10).

There was emerging evidence of other people within clinical areas or departments who championed sustainability, this seemed to be more prevalent amongst the nurses who took part who had witnessed others attempting to make changes. "*There are some real champions. For example, there's a nurse who has helped to introduce recycling into the ICU for paper and non-clinical waste. There's also a nurse trying to get more computerised documentation going*" (P7). Statements like this seem to demonstrate gratitude towards the efforts of others, with a sense of true appreciation for their contribution to sustainable healthcare.

However, those roles were often informal and fulfilled out of good will. Therefore, these people were willing to step outside of the dominant social paradigms and professional identities to fulfil the role. "*I have taken on an unofficial role within my department to be a sustainability lead. I believe this is my role, due to it being my passion.. so whatever is done is done through choice, not instruction. I believe ALL practitioners SHOULD have an ingrained role to being a sustainable practitioner*" (P8). There was emphasis placed on a collective responsibility with the use of capital letters for *ALL* and *SHOULD*. It appeared that these individuals who take on such

unofficial roles elicit a variety of responses in others. Some people find them inspirational while others are more cynical about the possible outcomes, one champion stated that: "*Many people agree but don't own what they can do, so just leave their thoughts there. Some listen but don't act on their thoughts. Some have said that it is all pointless and sustainable health care doesn't work anyway"* (P8).

There appeared to be two different types of responses when discussing responsibility. Some participants internalised the responsibility providing extremely passionate responses, using words such as 'ours and we' indicating a sense of ownership: "*...at the moment our 'healthcare' is causing a huge amount of harm to other people in other places or times. It is not right that we rob future generations of their health because we are profligate with ours*" (P1). While others provided a response that appeared to be disassociated from personal responsibility, illustrating a sense of external control towards businesses and leadership. "*All business should strive for sustainability. Health and environment are linked so should definitely lead by example*" (P14).

There was an interesting difference in attitude and behaviour described by the two participants who worked in a private setting. They described staff and their vested interest in the success of the business. "*Try and reduce waste of resources both at home and in working environment because it is an individual privately owned nursing home which all staff feel involved with*" (P14). This may illustrate a deeper connection to the real costs (financial and environmental) associated with the care environment.

Minority and Marginalised

Those who were interested in discussing climate change reported a sense of being a minority and marginalised for their views, this was mentioned by six out of 15 participants a total of seven times. This is consistent with the work of Griggs et al. (2017) which highlighted the power of social norms and the need to conform. Some participants described the need to approach the topic carefully, hinting at the politicised nature of the topic. "*Yes [I talk about climate change] but I'm in a minority and I'm very careful not to evangelise because that will turn people off*" (P1).

Others described feeling ostracised and ridiculed for their views. "*I felt like I was on my own and every time I brought up sustainability, I sensed people were almost laughing at me and thinking I was just being silly*" (P7). One participant was fearful of responses which meant they were reluctant to discuss the topic through fear of social isolation. "*I talk less to people since becoming a nurse, than I used to before, the uncomfortable reactions of others mean I don't always take opportunities to bring issues up*" (P10).

Control and Power

The notion of control and power was mentioned by 11 out of 15 participants and a total of 36 times. There was an overwhelming sense of a lack of control, powerlessness and frustration with the situational, environmental and policy constraints at work. This is consistent with Griggs et al. (2017) and the notion of environmental numbness which led to inaction. A lack of control over the working environment received a lot of attention. "*The hospital is very old and has an archaic heating control system"* (P1).

"The heating is set in a central hub none of the radiators have a working thermometer, the patient nearest the radiator is the warmest and the frail patient further away is the coldest. The staff are hot all the time as working hard and constantly on the move, in the summer the wards are too hot... in winter let the cold air in ... The lighting is the strip lights or the small over the bed lights both with no low energy bulb" (P13).

There was also a recognition and frustration towards the impact that policy has on the working environment. Policy was identified as a factor that inhibits choice and removes professional judgement. "*Staff generally are hampered by the health and safety policy. Policies dictate that they are not allowed to use their judgement"* (P9).

"But you are bound by culture where you work (particularly in ICU where staff are caring for the sickest people in the hospital and 'overdoing' things as a precautionary measure and also perhaps to reassure family) and also by protocols and policies which are not necessarily evidenced based" (P7).

Participants reported a lack of localised control but despite this some described a desire to become more involved in decision making. There was a sense that some people wanted to challenge the ritualistic or historical social norms to take more control, however it is unclear if these are rhetoric or tokenistic statements. "*It [procurement] seems very far removed from clinical nurses and perhaps one thing that could help is having more clinical staff involved or at least communicating with people in central procurement... I don't feel I have any influence, but I would like to do more if the opportunities were there"* (P7). This may once again illustrate an externalised responsibility instead of finding ways in which they could get involved and take a proactive approach to procurement.

A lack of control may lead to feelings of disempowerment and futility as participants are aware of the problems but helpless to do anything about it. "*People I have spoken to have all said the same: something needs to be done but we are unsure as to what"* (P5). Interestingly, the one participant working within a private General Practice described a greater sense of control. "*Within the GP surgeries I will use a vacant GP or Nurses room to type up my assessments. On entering these room, I will usually have to turn on the lights, start up the computer and turn on the radiator if required"* (P2).

Home Versus Work

Behaviour and attitude at home versus work environment was mentioned by 13 out of 15 participants and a total of 17 times. This is consistent with Griggs et al. (2017) who documented a disparity between pro-environmental behaviour at home and at work. Within this code there was a general recognition that behaviours were different between these two settings and that there were more wasteful behaviours at work. "*A lot of people are very proud of their efforts at home but then don't do as much at work"* (P3).

There was a sense of ease of control at home, with participants able to exercise personal values and behaviours at home. Participants also reported the lack of personal incentive at work with no personal costs incurred. "*I find this much easier at home as all of my family are on board. We recycle as much as possible, have LED light bulbs (which we remember to turn off), have insulated the house so we don't waste heat"* (P6). "*I think that when at work you don't think of the cost implications when using resources whereas as home when you have to personally pay for them you may be more careful of what you use"* (P11).

Although only mentioned by one participant the notion of food waste seemed particularly powerful illustrating the differences between home and work which Dunphy (2014) refers to as situational constraints. "*One area I find really hard at work, which I think may affect people is the waste of food. Taking unused food at work can be a sackable offence, so every day staff go and buy food and watch perfectly good food go in the bins. No one would waste food like that at home, but we see it happen twice a day at work. It is particularly hard when we are on a busy day and don't have time for a full break"* (P10).

The concept of waste was divided into two sub-sections, firstly the waste that is generated in healthcare, and secondly how that waste is then managed. Participants described wasteful behaviours which may be linked to a lack of information about the costs and the fact that no personal costs are incurred. "*Currently, I witness behaviour like throwing things in clinical waste that doesn't need to be managed like that, opening lots of packages 'just in case' those supplies are needed, overstocking bed-spaces"* (P7). Waste was then being incinerated at a high environmental and monetary cost and there is little acknowledgement of the lifecycle of an object or product which adds to indiscriminate use. "*In the operating theatres, we put a lot of packaging and clean waste into the clinical waste stream because it's 'easy' or because we think that waste which has touched a patient in any way is 'dirty' and therefore must go in clinical waste"* (P1). This illuminates an overreaction to what is considered *dirty*, it seems that anything that has come into contact with a patient, irrespective of real contamination (i.e. body fluids), is placed in the clinical waste, which is not consistent with infection prevention policy. It appears clinical staff must balance conflicting priorities between culturally accepted infection prevention practices and being environmentally friendly.

One participant commented on the impact that agency or bank staff have on a department's waste management. "*Due to high dependence on agency staff, team understanding of appropriate use of disposable items which would reduce waste is diluted and results in variable levels of unnecessary waste… Most of the ward staff are aware of and accept waste reduction and thoughtful use of higher energy waste streams, however this falls down in daily practice as we depend heavily on agency staff, who have no understanding or buy into to waste reduction"* (P10). These staff are often transient and have no connected or vested interest in the clinical area, it is unlikely they would have received any training for the specific clinical area therefore may have a lack of appreciation for local initiatives.

Moral Disengagement

Moral disengagement was implied by 10 out of 15 participants a total of 24 times. This is consistent with Griggs et al. (2017) who mention moral disengagement as just one of many psychological processes that individuals enact to avoid the ascription of personal responsibility. There was a sense that 'others' don't care about the environment and being sustainable. "*Some people are dismissive and see it as something they don't need to worry about"* (P3). Participants witnessed a disconnect between the healthcare they are delivering and the impact on the environment. "*They recognise that climate change exists, but they can't see how that relates to their day-to-day practice of things they can influence. I think it would be good if people could see more of a connection between their own clinical decisions as a nurse"* (P7). There was a general apathy witnessed in others towards thinking and acting on climate change. "*Some don't regard sustainability as important and don't wish to think about it or partake"* (P8). There were some who were aware that their behaviour was contributing to a problem but were unable to translate

that knowledge into behaviour. "*Some people when challenged know they are being wasteful but don't wish to change their practice"* (P8).

Social Norms

The theme social norms were inferred by 10 out of 15 participants and a total of 21 times. The theme incorporated the codes 'comfort' which was associated with western lifestyle and 'consumption' which was linked to a casual attitude towards commodities. This is strongly aligned to the work of Griggs et al. (2017) and participants described the desire within society to prioritise comfort over the environment. "*Most people seem to have a similar attitude in healthcare to other parts of life, that it is not as important as comfort, as holidays abroad or having a car"* (P10). The desire to lead a comfortable western lifestyle may not be driven simply by social norms but in fact a deeper competitive self-interest and an implied sense of individualism was prevalent in many of the statements. "*I want a holiday and everyone on Facebook has photos of being abroad in the sun, so flying on holiday is normal"* (P10).

There was also reference to the consumptive behaviours at work and at home, with an expectation that commodities are there to be consumed with little acknowledgement of the environmental or social costs. Perceptual limitations seem to be preventing individuals within healthcare to recognise overconsumption, with the ease of procuring and stocking the cupboard resulting in little thought to environmental degradation. "*There is a casualness that if it's needed it should be available in the store cupboard and they never question the cost"* (P13). *"Staff do not think about the resources and just use products as needed without thinking of the bigger picture"* (P5).

Emotional Priority

Emotional priority was mentioned by eight out of 15 participants a total of 19 times and was an amalgamation of two codes: the first was the level of priority assigned by staff to the concept of climate change; the second was the emotional labour associated with the job and the feeling that there was little time or energy to commit to the concept. This is congruous with Griggs et al. (2017) who found that caring for sick patients took priority over environmental issues. Therefore, action on climate change and sustainable healthcare was deemed a low priority. "*They think that they're already doing enough because they work in healthcare"* (P1).

While others described the reactive culture of healthcare and that conscious intention to act environmentally requires emotional and physical energy. "*My impression is that most people are just too tired and worn out to look beyond the absolute immediate moment and can't think about future use of resources"* (P7). Participants described a finite pool of worry and a sense that the path of least resistance is often taken by busy clinicians. "*I think they come to work to do a job and when you're pushed and stressed you often take the easiest route at the expense of the environment or resource"* (P4).

Money

Money was mentioned by 11 out of 15 participants and a total of 17 times. Participants were keen to share their thoughts around the lack of money within the NHS and the influence this has on pro-environmental behaviour. *"In the UK our NHS is buckling under a chronic lack of funding"* (P3). However, this notion was countered by other participants who inferred that there

was a misappropriation of money. "*Constant cutbacks are made to save money, yet money is wasted, and patient care compromised"* (P2). Griggs et al. (2017) documented some of the physical and contextual barriers to engagement, of which money and resources were cited as examples.

There was acknowledgment that decisions around services, procurement and staffing were predominantly based around money rather than sustainability. "*Procurement driven by cost/suitability"* (P15). There was a recognition that sustainable healthcare is important but a fear that this may compromise elements of the service and links back to the level of priority assigned to this topic. "*Sustainable healthcare is important, yes - but at what cost. If it can be cost neutral great"* (P12).

Several participants acknowledged that cost was extremely important but that it needed to be considered alongside the environmental and social impacts. "*The world over, we should all be working together to ensuring 'fair trade' just as much as greening up and financially improving things (overlap of environmental, financial and social sustainability)"* (P7). "*Social equality has a role to play and people valuing themselves, others and their places is also important"* (P10). This finding differed slightly to that of Griggs et al. (2017), who found that there was ambiguity around the meaning of the word sustainability, with clinicians often believing it to mean service longevity and cost effectiveness. Whereas participants in this research revealed what appeared to be a good understanding of what sustainability means. "*Sustainable healthcare means being more in tune with our environment and mindful of how we use resources"* (P6). However, participants did openly acknowledge that decisions were made with need, cost and suitability in mind which is different from a misunderstanding of the word sustainability described by Griggs et al. (2017).

Evidence

Evidence was mentioned by 10 out of 15 participants and a total of 14 times. This theme incorporated narrative around the lack of believable experts and a mistrust in media and government statements. These responses seem to exhibit self-exonerative tendencies as the blame for lack of trustworthy information was placed on others. "*Climate change influence is an area for experts to detail/prove/disprove. My understanding of human activity on climate change comes from the media and politicians and hence my knowledge has no basis in fact... Extreme lack of believable expertise as all information comes from journalists or politicians"* (P15).

There were responses that exhibited a much more empowered and logical approach, whereby information from different sources was read and interpreted. "*I based my own thinking on the info put out by things like the recent Paris Climate Change consensus, information in the news and science journals about summary from scientists who do say there is evidence for this in relation to global warming and climate change"* (P7).

Despite both approaches there was an overarching sense that individuals feel they do not know enough that they are not qualified to speak on the topic and that they want to know more. This lack of perceived competence, which is a vital component of behaviour change, may inhibit their intrinsic motivation to act. "*Not sure there is any evidence base for my thoughts…. I'm not sure how substantial the evidence is for this… I'm not an expert on the science of this"* (P7). Although evidence per say was not mentioned within the work of Griggs et al. (2018) this may be a form of avoidance or externalising responsibility onto others, which further reaffirms some of the complex psychological processes to avoid personal responsibility.

Figureheads

Leading on from evidence was the theme of *figureheads* which was mentioned by four out of 15 participants and a total of six times. This was mainly associated with countries, politicians and governments who are being seen to thwart attempts at climate change mitigation. "*It feels like many countries do not have that same sense of urgency, particularly when agendas from Donald Trump and others question the reality of climate change"* (P7). "*It's always the other guy's fault. No leadership, no time, no guidance, 'it won't make any difference because China is opening eight new coal fired power stations a day"* (P1). "*What's the point of thinking about us doing anything if Brazil and China and India are continuing to make so much pollution"* (P6). As with the previous theme, blaming the lack of reliable leaders as a reason for inaction may be another form of self-exoneration and externalising responsibility.

Scepticism

A level of scepticism was evident from five out of the 15 participants and was mentioned five times. The scepticism was mainly associated with recycling and what happens to the items that have been sorted and disposed of. There was a suggestion that this scepticism is a reason why people do not engage with recycling. "*You're never really sure if the cardboard actually gets recycled (you hear about porters just chucking everything in rubbish because of limited recycling abilities - so you do your job putting the cardboard in the recycling and then all those efforts are meaningless which then means people don't bother a lot of the time)"* (P7). Once again, this theme was not highlighted by the work of Griggs et al. (2017) but could represent a form of denial.

Discussion

The aims of this small-scale research project were to:

1. Explore perceptions of nurses and front-line healthcare clinicians, managers and estates / infrastructure staff towards climate change and environmental sustainability within the UK.
2. To explore if the themes from the literature review (Griggs et al., 2017) were present in a small sample of UK healthcare staff.

Eleven core themes emerged from the findings which are summarised as follows. There was an overriding sense of *responsibility* exhibited by participants who acknowledged their personal duty to act in a pro-environmental manner. These individuals also described the good work of others who were described as *champions*. Those who do speak and act on climate change described being ostracised and marginalised for their outlook, they described feeling like a *minority*. Despite the desire to act, there was a sense of powerlessness and lack of control over the working environment. In addition, adherence to work policies seemed to inhibit the sense of *power and control*, along with differences between public and private settings. Participants acknowledged their sense of control at home, illustrating the difference in behaviours at *home versus work*. There was a sense that there were no incentives at work to be environmentally friendly and there was a significant amount of waste at work compared to at home. There were concerns about the use of agency staff and their willingness to engage in established pro-environmental practices.

Moral disengagement represented a general apathy towards climate change and sustainable healthcare, this ranged from a lack of care through to a sense of disconnect between personal

responsibility and pro-environmental action. The power of *social norms* was documented by several participants who described the comforts of western living and the consumptive behaviours attached to those lifestyles. The high levels of emotional labour associated to health and social care was also identified as a barrier to pro-environmental behaviour, and for many thinking about the environment was simply not a priority. A lack of energy and low levels of emotional resilience meant that being environmentally friendly was not an *emotional priority*. A lack of *money* and investment was cited as a major barrier to engagement with most decisions being made from a financial perspective not an environmental or social justice perspective. There was a feeling that a lack of believable experts and *evidence,* combined with a strong campaign from climate change deniers continued to cast a lack of clarity over the subject. This combined with a lack of leadership from politicians and *figureheads* has led to widespread *scepticism* about the realities of climate change.

This thematic analysis has affirmed that all, bar one, of the themes identified by Griggs et al. (2017) in their literature review appear to be present within the sample of UK healthcare staff. This discussion will begin by exploring the consistencies and alignment with the work of Griggs et al. (2017), and the possible reasons why one aspect of their work was not affirmed within the current study. The second part of this discussion will explore the new insights gained during this thematic analysis, the contribution these insights make to the existing body of knowledge, and the implications for further research.

Consistencies and Alignment to Exiting Literature

The literature identified ambiguity around the word sustainability, with a strong connection to money and service longevity and an absence of an ecological focus (Anåker and Elf, 2014). This was the only aspect from the existing body of literature that was not present within this thematic analysis. Participants within this thematic analysis illustrated a sound appreciation of what sustainability means and were able to articulate a variety of personal interpretations, all of which took a holistic and ecological viewpoint. The reason for this apparent increase in awareness may be due to the work of the *Sustainable Development Unit* and the global political context at play since Griggs et al. (2017) performed their literature review in early 2016, or self-selection whereby those who volunteered to take part had a better understanding.

An *endemic blindness* to global issues was present within both the literature and this study and participants within this research revealed a strong sense of disconnect between local actions and global consequences. Many responses indicated *moral disengagement* is some form, ranging from participants own moral disengagement through to witnessing it in others which is consistent with the work of Grootjans and Newman (2013). *Environmental numbness* leading to inaction was exhibited, often leaving participants feeling disempowerment and that actions may be futile, all leading to *cognitive dissonance* (Festinger, 1957). There appeared to be an *attitude-behaviour gap* (Siegel, 2018; Swim et al., 2011) as participants were aware of climate change and the health impacts yet reported feeling disempowered and lacking in confidence to act.

The power of *social norms* was evident, and this research revealed a strong link between the desire to be socially accepted through the adoption of comfortable lifestyles. Participants described the desire within society to prioritise comfort over the environment which is consistent with the work of Swim et al. (2011) and participants described witnessing a competitive self-

interest in those around them (Sörqvist and Langeborg, 2019) indicating individualism (Weber and Stern, 2011) rather than universalism. Interpretation of distant consequences (Griskevicius, Cantú and van Vugt, 2012) is subjective and at present it seems that the rewards for a consumptive lifestyle provide reinforcement that strengthens the desire to engage with that behaviour.

The priority of sustainability for frontline staff was suggestive that due to the emotional demands of the job, staff perceived that they had little emotional resilience left for environmental issues (Dunphy, 2014). *Attentional resource theory* (Cohen, 2001) suggests that front line staff must prioritise tasks and pro-environmental action is a low priority as they have a finite pool of worry (Heidt, 2018) This also links to *Maslow's hierarchy of need* (1943, cited in Kollmuss and Agyeman, 2002), which suggests that individuals must rank the most pressing problems. Within healthcare this is likely to be immediate physiological and safety needs of patients, and the likelihood of attending to esteem needs and self-actualisation through pro-environmental behaviour is low.

Fear of being ostracised or entering a politically emotive topic was linked to a sense of being a minority (Polivka et al., 2012). This is a reoccurring theme found by Dunphy (2014) in Australia and Polivka et al. (2012) in the US as individuals feared being ostracised and ridiculed for their views. This is like the findings of Minson and Monin (2012) and Sparkman and Attari (2020) who document the derogation of those attempting to be environmentally friendly. In addition, Boswell, Cannon and Miller (2004) describe a pandemic apathy through fear of social isolation.

A disconnect between behaviours at home and at work were evident which is consistent with the work of Anåker at al. (2015). Reasons cited for this difference included environmental constraints (the need to have equipment and lighting on most of the time), however, participants

also noted the effect of a well-stocked equipment cupboard that does not list the price of products whereby staff do not have to pay for the products they use. This situation seemed to create a casual approach to resources with little attention to the lifecycle or carbon impact.

The literature revealed a complex psychology of responsibility and blame towards climate change. Griggs et al. (2017) discovered many psychological barriers to action, including cognitive dissonance, denial, fatalism and bystander effect. They found a general apathy towards thinking and acting on climate change and responsibility and a suggestion that forms of emotion-focussed coping, such as denial, were present within healthcare which is consistent with the work of Cohen (2001). Griggs et al. (2017) suggested that climate change does cause a feeling of cognitive dissonance and that participants and those around them used various coping strategies such as *moral offset*, *fatalism* and *bystander effect* to create a state of *cognitive consonance*.

Both the literature review and this research revealed individual and social reasons to externalise responsibility (Sparkman and Attari, 2020). Participants described various forms of externalised responsibility, blaming a lack of leadership and lack of trustworthy information as the causes of their inaction (Gifford, 2011). This research revealed a sense of resentment towards the inaction of others or *free-rider effect* (Nordhaus, 2015), and *self-exoneration* was exhibited as a reason for lack of engagement (Anåker et al., 2015). This research found a level of scepticism towards figureheads, information sources and sustainable initiatives, all of which led to lack of engagement with initiatives such as recycling (Swim et al., 2011). Scepticism and mistrust are cited by Kotter and Schlesinger (2008) as one of the four main reasons why individuals resist change.

It is evident that this research has confirmed many of the findings of the literature review. This research has provided a useful insight into the thoughts and perceptions of UK healthcare

staff and while it cannot be generalised it provides a baseline which has not previously existed. It has also illustrated the similarities that exists amongst healthcare staff globally as they experience the daily challenges of providing safe and effective care alongside the knowledge that they are contributing to ill health.

It is important to acknowledge the contextual barriers and situational constraints and the impact these have on psychology and perception. This research has illustrated that there are many structural barriers in place, many of which could lead UK healthcare staff to develop psychological coping strategies. It is possible that with the removal of structural barriers there may also be greater psychological engagement. While the focus of this research is on the psychological engagement it is recognised that psychology and the actual working environment are inextricably linked.

New Insights

In addition to affirming the findings of the literature review, this study has revealed new insights. Griggs et al. (2017) predominantly focused on disengagement at multiple levels and while they have provided a useful insight to disengagement their work did not consider those who do actively engage in sustainable healthcare. This study has affirmed almost all the challenges and barriers identified by Griggs et al. (2017) but crucially it has identified two new and significant groups of individuals that have not been explored within healthcare literature on climate change. The first group are morally engaged and actively participating in sustainable healthcare; and the second group are morally engaged but not actively participating in sustainable healthcare.

To date there has been significant research and debate around those who are morally disengaged, Taylor et al. (2014) examined UK public perceptions and Boykoff and Boykoff (2014)

examined US public perceptions. Swim et al. (2009) explored this group at length and the various means of disengagement due to: temporal discounting; lack of perceived risk associated to climate change; mistrust of evidence or by the strength of social norms. Most of this emerging body of literature seems to be concerned with those who are morally disengaged (e.g., Gifford, 2011; Heald, 2017; Peeters et al., 2019).

Hourdequin (2010) provides a fascinating discussion into the concept of personal obligation to cut carbon emissions. She explores the work of Hardin (1968) who suggested that a top-down approach was needed to influence personal behaviour and thus reduce personal contributions to greenhouse gases. Hardin (1968) cautioned that relying on conscience alone was not enough and formal taxation or coercion of the morally disengaged was needed. Hourdequin (2010) balances this with the work of Confucius who rejects the notion of coercion as a genuine means of social reform suggesting these changes are transient. Therefore, many authors and much research (e.g. Gifford, 2011; Heald, 2017; Peeters et al., 2019) has debated if and how it may be possible to generate genuine moral change within this group of individuals.

Traditional change theorists such as Rogers (2003) suggest that with any innovation there are five adopter categories: the innovators, the early adopters, the early majority, the late majority and the laggards. Environmental psychology (Gifford, 2011) has often focused on the late majority and the laggards who are often reluctant to embrace change and can ultimately stifle development and the success of the change or innovation. Rogers (2003) suggests the key to successful change is to focus energy and reward on the early adopters and early majority. By creating a desirable *in-group* the laggards begin to feel isolated and eventually want to join the *in-group*. This is not to say that all climate change policy should ignore the deniers and disengaged but it does raise the question of how the early adopters are being encouraged and rewarded.

This research has highlighted small pockets of success, led by champions who exhibit strong biospheric views and a sense of obligation to act pro-environmentally (Weber and Stern, 2011). The concept of personal responsibility and a moral imperative to act against climate change was evident amongst these participants and is consistent with the literature reviewed. Anåker and Elf (2014, p. 386) propose that "responsibility and willingness to change" are key antecedents to sustainable healthcare, however, this is based on a theoretical and conceptual model of what should happen, not necessarily a reflection of what happens. This research indicates that the antecedent of responsibility may be present in UK healthcare settings, and the presence of these individuals brings a sense of hope to a subject area which is seemingly consumed with barriers and challenges (Griggs et al., 2017).

These individuals have normalised pro-environmental behaviour and instead of wanting or having to act, they feel they ought to act (Van der Werff, Steg and Keizer, 2014). Swim et al. (2011) suggests that personal responsibility will be dictated by whether an individual perceives the cause of climate change to be anthropogenic or a natural cycle. This would indicate that these individuals believe climate change to be caused by humans which correlates to their increased sense of moral and ethical duty and obligation. Hourdequin (2010) suggests that these individuals act with a sense of moral integrity which she describes as a conscious environmental synchrony between personal and political actions, compelled by a desire to act in an environmentally sensitive way in all aspects of life. These individuals serve as moral models within society and Hourdequin (2010) optimistically suggests that according to the Confucian model these people can be catalysts for social reform and can inspire others to adopt more virtuous behaviours. This is supported by Rogers (2003) who recognises that a small number of highly influential individuals can be far more powerful than a larger group of people who are less influential.

Within this discussion so far, it is evident that there may be some keen activists within the UK healthcare setting, they are committed campaigners who tirelessly pursue their quest to be pro-environmental. There are also the morally disengaged who have been the focus of much research (e.g., Gifford, 2011; Heald, 2017; Peeters et al., 2019), however there is an emerging notion that energy should be centred around those who are concerned about climate change but not yet compelled to act (Rogers, 2003). Therefore, the remaining part of this discussion will explore those who are concerned yet inactive and some of the potential reasons for their attitude-behaviour gap (Siegel, 2018).

When examining those who are concerned yet inactive within UK healthcare, it is important to consider the concept of roles in relation to obedience versus authority. Milgram (1974) proposed that individuals were in one of two categories within society: those in subordinate roles, and those in authoritative roles. Subordinate roles were associated with conformity, obedience and direction from the authoritative figure. The authoritative figure was in a position of power, was well respected within society and had great autonomy and influence over others. Within the UK healthcare environment, it is possible to draw strong parallels between Milgram's (1974) hypothesis and the hierarchy that still exists. The UK healthcare sector is steeped in hierarchy (Ham, 2014) and the presence of a grading system and uniforms to delineate professional status strengthens this concept (Holyoake, 2011). The *doctor-nurse game* is intrinsically associated with boundaries and rules thus reinforcing the notion of obedience and conformity (Holyoake, 2011).

Hamilton (1978) explored the dichotomy of *responsibility attribution*, particularly the different types of responsibility that exist within different roles and this can be likened to healthcare professionals within the UK. Hamilton (1978) suggested that individuals will often take

responsibility for completing a task or action and they do this to fulfil their role and to satisfy the higher authority. In doing so they often reject responsibility for the outcome of the action, because it has been completed under the direction of authority and it is deemed an essential part of the role. It is possible to draw parallels to the UK healthcare sector as the harmful outcome of care (the carbon emissions) can be offset against the fact that the task is an essential part of their role (Bandura, 2002).

Those who are concerned yet inactive present a challenge to healthcare leaders and policy makers. These individuals may represent a significant group of concerned citizens who are cognitively aware of the problem of climate change and are able to make the connections between local actions and global consequences. According to Rogers (2003) they may be in the *pre-contemplation* stage of the *Innovation-Decision process*, whereby they have knowledge, and they understand the messages being presented to them. Therefore, the challenge is to bridge the attitude-behaviour gap and to convert thoughts into meaningful behaviours. According to Swim et al. (2011) adaptation to climate change requires the development of psychological processes that precede behavioural responses; therefore, it could be argued that this group have already started to adapt psychologically to the realities of climate change, and now simply require the permission to adapt behaviourally. This can be seen through statements such as: "*It [talking about climate change] is not something that I have thought of doing before"* (P11). *"I don't know who I can work with in the hospital... I've not met any other staff who express concerns about this, it leaves me feeling disempowered"* (P10).

Hourdequin (2010) recommends that the key to sustainable moral change for individuals can be achieved through a combination of top-down and bottom-up approaches. These individuals are demonstrating an appreciation that they are contributing to climate change and therefore a

willingness to change (bottom-up), however as many occupy a subordinate role (knowingly or not) they may be waiting for permission from an authoritative figure to begin behaving differently. However, it is acknowledged that more research is needed, specifically with this group of individuals, to explore the factors that may be holding individuals back from acting.

Stern's (2000) *ABC theory* suggests that behaviour is determined firstly by the beliefs of the individual and secondly by the context and environment in which they exist (behaviour = attitude + context). These individuals seem to exhibit the correct attitude however there is a contextual factor that is inhibiting behaviour. The context could be: cultural; limitations within the physical environment; the lack of reward; and the lack of availability of public policy. These contextual factors need to be understood through research in more detail. Stern (2000) adds an important variable to this equation suggesting that perceived personal capability could be an inhibitive factor, personal capability may take various forms and could be sociodemographic (age, income, and education) in origin. Knowledge and perceived level of understanding of a topic will have a strong influence over action, which is consistent with the findings of this research and the literature review, in that individuals do not feel informed enough to act, they feel they lack the subject knowledge and therefore do not have the confidence to act (Okumah, Martin-Ortega, Novo and Chapman, 2020).

Research is needed to understand those who are concerned yet inactive to ensure that pro-environmental messages are pitched and framed appropriately. This also needs to be balanced with the celebration of those who are already acting, with information that shares feasible and practical steps that can be taken by busy frontline staff. Smith and Mayer (2018) acknowledge the potential for positive consequences because of collective responsibility, however this can only work when there is collective action (Anåker et al., 2015; Dunphy, 2014; McMillan, 2014). Rogers (2003)

explores the concept of *critical mass* when implementing innovation and change. Critical mass represents a tipping point whereby the rate of social change rapidly escalates and becomes self-sustaining. Rogers (2003) suggests that to reach critical mass, the innovation or change (i.e., pro-environmental behaviour at work) should be promoted amongst groups, such as the altruists, who are most likely to be receptive to the proposal. This further supports the notion that the early adopters and the early majority should be supported, rather than spending valuable time attempting to coerce or persuade the late majority or the laggards.

Therefore, this research recommends further exploration into the subjective experience of those who are concerned yet inactive, but rather than focus on the barriers it needs to explore the possible factors that have enabled action. Gaining intelligence from front line staff on the factors that influence their attitude-behaviour gap such as: understanding the influence of authority, understanding who can grant permission for action, and which information source is respected would be useful for managers, policy makers and researchers alike.

Theoretical, Practical and Research Implications

This small-scale research project has highlighted three key implications:

1. There are many barriers to sustainable healthcare in the UK consistent with the work of Griggs et al. (2017), these include both contextual barriers and situational constraints within the working environment, and psychological barriers that individuals adopt to avoid action. This knowledge provides a theoretical baseline for the field of environmental psychology within UK healthcare.

2. This research provides an insight into the potential influence of value orientation and while much of the research in other disciplines has focussed on those who are disengaged, this research recommends exploring and researching those who are concerned about the environment but unsure of how to act.
3. From a practical point of view, organisations wishing to implement sustainable healthcare need to understand the values and beliefs of their staff to pitch campaign policy and communications at an appropriate level.

Limitations

This research has provided an insight into perceptions of climate change in the UK. To date there has been very little research in this field therefore this adds a valuable baseline from which future research can build upon. There were limitations to this research, the first and foremost was the small sample for the online questionnaire and the fact that the results cannot be generalised to all healthcare settings.

The use of a professional Twitter account to advertise the study attracted participants from a mainly clinical background. This was due to my own role as a nurse and the networks that had been built using the professional Twitter account. As a result, there were no responses from people working within estates and infrastructure roles. The lack of estates and infrastructure perspective limits these findings as these individuals are often in roles that address some of the structural and contextual barriers mentioned. The lack of inclusion of people within those roles was no intentional and this method of recruitment limited the diversity of participants. Further research could usefully target the perspective of people working in estates and infrastructure roles.

Another limitation was the risk of self-selection bias, meaning that results could represent those who are interested in the topic of climate change and sustainable healthcare; however, it is hoped that the risks were mitigated by using Twitter to access a national sample of healthcare professionals. Despite the richness of some responses, it was also clear that some participants were not passionate about the subject and this was reflected in the type and depth of answers provided.

Both a potential strength and limitation of the research was the emic position of the researcher as a nurse. The strength being an appreciation of the sector and the challenges encountered by frontline staff. The limitation being the strong views held by the researcher about climate change, however it is hoped that this limitation was mediated by the quality assurance processes of bracketing and inter-rater reliability.

Conclusion

This research has provided an insight into the perceptions of frontline healthcare staff in the UK on climate change and sustainable healthcare. This study has demonstrated that the findings of the literature review can be applied to the UK healthcare sector. The findings have illuminated that many contextual barriers and situational constraints exist within UK healthcare settings that prevent people from behaving pro-environmentally. In addition, there are psychological manoeuvres that are deployed to avoid the ascription of responsibility.

This study has added a new a dimension and identifies a group of staff who are already morally engaged and acting and those who are morally engaged but awaiting permission or direction to act. This research suggests taking advice from traditional change theorists and by focussing efforts on the early adopters a powerful social movement can be fostered and nurtured. For this to occur it is important to understand the factors informing the decisions made by those who are morally engaged but not yet actively engaging in pro-environmental behaviour within clinical practice. Further research is needed to identify the factors that enable change, and this may then inform policy and the communication strategies from key authoritative figures.

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Appendix 5: Example BOS Questionnaire

Name:

Job title / role:

Please state your age bracket:

21-30	
31-40	
41-50	
51-60	
>60	

What type of Healthcare setting do you work in?

Private	
Public	
Charitable	

How long have you been working in Healthcare?

<5 years	
6-10 years	
11-15 years	
16-20 years	
>20 years	

How would you describe your role?

Clinical	
Managerial	
Estates / infrastructure	
Other (please specify)	

What Band are you currently working at (nurses only)?

Band 5	
Band 6	
Band 7	
Band 8	

Please state your geographical region in the UK:

Northern Ireland	
Scotland	
Wales	
North West England	
North East	
West Midlands	
East Midlands	
East of England	
London	
South East of England	
South West of England	

1. <u>Your own area of practice / work</u>

The first part of this questionnaire explores your own area of work.

a. Can you describe how resources are used within your own area of work?

b. Can you describe how waste is managed within your own area of work?

c. Can you describe your work environment and how lighting, heating and water is used?
d. If you are involved in procurement what are the primary objectives when purchasing equipment or services?
e. Thinking about your behaviours at work and at home (use of disposable resources / lighting, heating and water) do you think there is any difference between the two settings?

2. Climate Change

The second part of this questionnaire explores your thoughts around climate change and the notion that human activity has accelerated global warming through the burning of fossil fuels.

a. Can you describe whether you feel human activity has had any influence over climate change and what impact it may have had?
b. Can you describe any potential threats to human health that could be caused by climate change?

3. Sustainable Healthcare

The third part of this questionnaire explores your thoughts around sustainable healthcare and the notion that the healthcare sector is the biggest carbon emitter in the UK.

a. Please describe what the term '*sustainable healthcare'* means to you?
b. Do you think that sustainable healthcare is important and why?
c. Can you provide details of a sustainable healthcare initiative in your place of work?
d. Do you believe you have a role in creating a more sustainable healthcare service?
   If 'Yes': Can you describe what you believe your role is in creating a more sustainable healthcare service?

4. Working with others

The fourth part of this questionnaire explores your experience of working with others and the attitudes and behaviours that you have witnessed towards climate change and sustainable healthcare.

a. Do you feel comfortable talking about climate change and sustainable healthcare with your colleagues?
b. Can you describe what attitudes that you witness at work towards climate change and sustainable healthcare?
c. Can you describe what behaviours that you witness at work towards sustainable healthcare?

5. Psychological Mechanisms

This final part of the questionnaire explores the growing body of literature that suggests people avoid engaging with the concept of climate change and sustainable healthcare through a variety of coping strategies.

Please take some time to look at the psychological mechanisms listed below and think about your own place of work. Identify if you believe you have seen these mechanisms in yourself or others and provide a brief description of the situation.

Psychological Mechanism	Yes / No	If 'Yes' – please explain:
The person believes that climate change is a natural cycle, and does not believe that humans have affected this process.		
The person believes it exists but avoids thinking about the topic or discussing it with others.		
The person believes that they already 'do their bit' by either being a nurse and doing good for society or by recycling at home.		
The person believes that there is no point in acting and blames others for their own inaction. The could be a lack of strategic policy (government or organisation) or blaming other countries that have high carbon emissions.		

Thank you for taking the time to complete this questionnaire.

<table>
<tr><td colspan="2">Please tick this box if you wish to receive a draft summary of the results of this research project, which should be available towards the end of 2017.</td><td></td></tr>
<tr><td colspan="2">Please tick this box if you wish to be sent details of the final publication in 2018.</td><td></td></tr>
<tr><td>The first 20 participants to complete this questionnaire will receive a £10 Ethical Superstore voucher.

Please provide your postal address in the box so that we can send it to you.</td><td colspan="2">Address:</td></tr>
</table>

If there is anything else you would like to add please use the following space for comments / feedback:

Appendix 6: Twitter Activity

Day 1: Chloe Griggs @sustainablenurs · Feb 7

LIVE: online questionnaire - sustainable healthcare - your views needed: https://v3.pebblepad.co.uk/v3portfolio/canterbury/Asset/View/sfxbw857b4tM7n8ppMts33pzbw …

Day 3: Chloe Griggs @sustainablenurs · Feb 9

Sustainable Healthcare survey: Nurses, managers and facilities staff needed. £10 high street vouchers up for grabs!

https://v3.pebblepad.co.uk/v3portfolio/canterbury/Asset/View/sfxbw857b4tM7n8ppMts33pzbw …

Day 4: Chloe Griggs @sustainablenurs Feb 10

£10 vouchers up for grabs. 15-minute online survey. Your views on sustainable healthcare needed:

https://v3.pebblepad.co.uk/v3portfolio/canterbury/Asset/View/sfxbw857b4tM7n8ppMts33pzbw …

Day 10: Chloe Griggs @sustainablenurs Feb 15

£10 vouchers up for grabs. 15-minute online survey. Your views on sustainable healthcare needed:

https://v3.pebblepad.co.uk/v3portfolio/canterbury/Asset/View/sfxbw857b4tM7n8ppMts33pzbw …

Day 11: Chloe Griggs @sustainablenurs · Feb 16

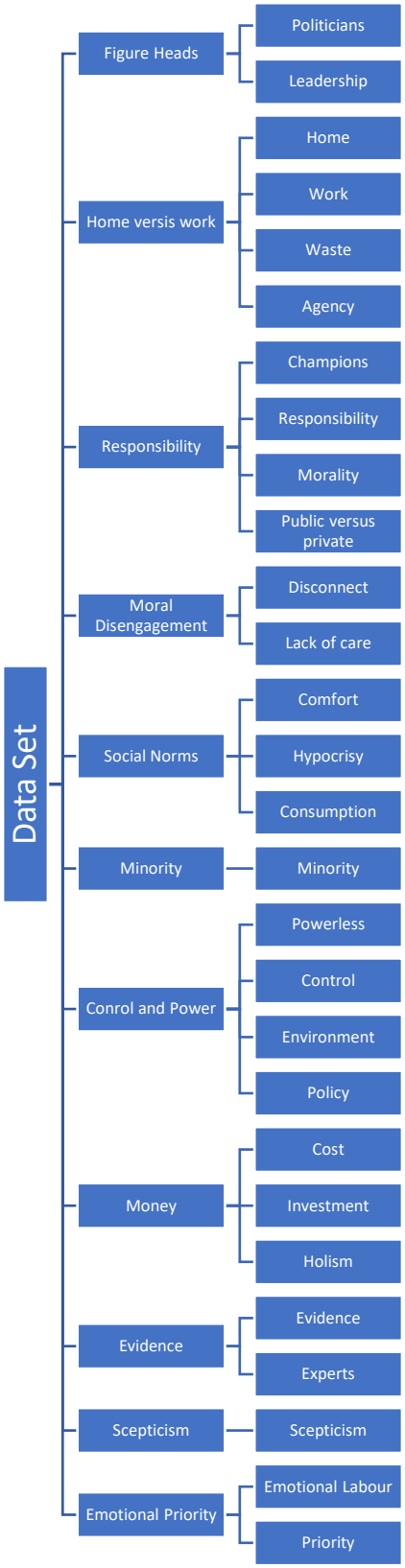
Only 12 days left to take part, a vitally important area of research for the future of OUR health service in the UK, and OUR health.

Day 15: Chloe Griggs @sustainablenurs · Feb 20

Only 1 week left to take part and share your views on sustainable healthcare: GB

https://v3.pebblepad.co.uk/spa/#/public/sfxbw857b4tM7n8ppMts33pzbw?historyId=JOyWupHMrDandpageId=sfxbw857b4tM7wzsR3g68rhMfZ …

Appendix 7: Visual Map of initial codes



Chapter 4

Applied Research Project:

Exploring the Values-Beliefs-Norms Theory of pro-environmental behaviour in an NHS community Trust

Abstract

Introduction

Anthropogenic global warming poses a serious threat to natural and human systems. Healthcare in the United Kingdom has a significant carbon footprint, and many organisations are working to reduce carbon emissions. There is growing attention to the impact that staff and ways of working can have on carbon reductions, despite this there remains widespread inaction amongst healthcare employees to work in a sustainable way. Research to date has focussed on healthcare staff who are morally disengaged and there is little research to understand factors that influence engagement. The aim of this research is to explore the personal factors (such as values, beliefs and norms) amongst NHS staff that influence pro-environmental behaviour at home. Once behaviours at home are understood it may be possible to encourage behavioural spillover into the work context.

Method

This research was the second phase of an exploratory sequential design, using a quantitative questionnaire data were collected from 184 employees within a community National Health Service Trust. The questionnaire consisted of five previously validated measurement instruments to examine the stages of the *Value-Beliefs-Norms (VBN) theory*. Correlations,

regression and mediation analysis were performed to examine the data in relation to the research hypotheses.

Results

The biospheric value type was positively correlated with pro-environmental beliefs and norms. The biospheric value type predicts conservation behaviour, environmental citizenship and overall pro-environmental behaviour. The altruistic value type predicts pro-environmental food choices. A person's ecological worldview and personal norms predicts environmental citizenship. Ascription of responsibility and personal norms predict pro-environmental behaviour. Personal norms predict conservation behaviour. Ecological worldview and personal norms mediate the relationship between biospheric value type and conservation behaviour.

Conclusion

The VBN theory proved to be successful in predicting certain behaviours such as conservation behaviour and the relationship between values and behaviour was mediated by beliefs and norms. The VBN theory was found to have predictive qualities with behaviours that were relatively simple and low personal cost (financial, time, effort). The VBN theory was not powered enough to predict behaviours that carry a greater person cost. By understanding the factors that influence personal behaviours organisations can structure sustainable healthcare campaigns to encourage behavioural spillover from home to work.

Introduction

The exploratory sequential design (ESD) is well suited to research where there is little guiding framework or sparse theory in existence (Creswell and Plano-Clark, 2011). The process is iterative, allowing the research design to evolve in a dynamic and organic manner, with subsequent phase design being informed by the emergent theory (Natasi, Hitchcock and Brown, 2010). This is the second phase of an exploratory sequential design. The first phase of the exploratory design completed in 2017 aimed to explore the psychological perceptions of healthcare staff, within the United Kingdom (UK), on climate change and sustainable healthcare. Fifteen participants from the UK, including clinical and non-clinical staff, from public and private organisation were recruited from a national sample to take part in an online qualitative questionnaire.

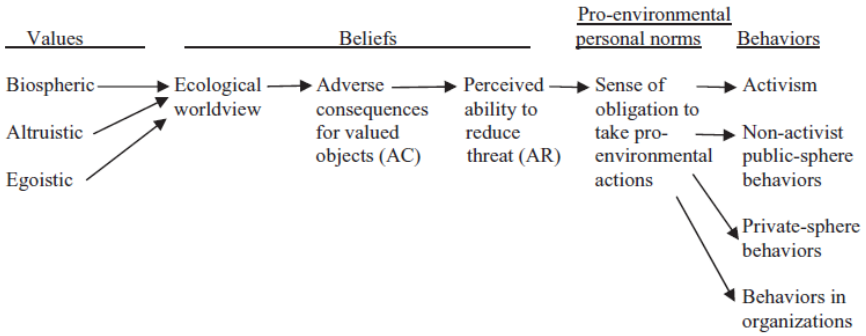
The questionnaire explored not only participants perceptions of climate change but also the attitudes and behaviours witnessed in others towards climate change and sustainable healthcare. The findings were consistent with previous literature, indicating a complex series of psychological coping strategies used to deal with harmful realities of climate change, resulting in a state of moral disengagement. In addition, the research highlighted two potential subgroups who were morally engaged, some of whom were actively participating is sustainable healthcare while others were engaged but prevented from engaging due to either the contextual barriers and situational constraints or the lack of certainty about the actions they could take.

The second phase of this exploratory design focusses on these two subgroups who are morally engaged. The exploratory design is often used to test or generalise the initial findings (Creswell and Plano-Clark, 2011), and in this case it will explore these two sub-groups via a

questionnaire structured using Stern's (2000) values-beliefs-norms (VBN) theory of environmentalism which can be seen in Figure 2. Stern (2000) suggests that pro-environmental behaviour as an outcome is influenced by a person's value type (predictor variable). However, this relationship between values and behaviours can be mediated by a person's beliefs (their ecological worldview) and norms (their personal and social rules). A mediator is described by Hayes (2013) as an intervening variable, which is located causally between *X* (values) and *Y* (behaviours). Therefore Stern (2000) proposed a causal chain by which variation in *X* (values) causes variation in the mediators M_1 (beliefs) and M_2 (norms) which then cause variation in *Y* (behaviours).

Figure 2

Value – belief – norms (VBN) theory of environmentalism



The aim of this research was to explore the personal factors (such as values, beliefs and norms) that have influenced pro-environmental behaviour amongst National Health Service (NHS) staff working within a community trust in England. As sustainable healthcare and climate change gathered momentum it was important to generate some baseline knowledge around engagement and the first step is to understand behaviours within the private sphere. The VBN theory could be

useful to aid understanding of how values, beliefs and norms are linked to private behaviour and how the notion of behavioural spillover (Nash et al., 2019) may be used to inform future sustainable healthcare campaigns.

Background

Anthropogenic global warming also known as climate change poses a serious threat to both natural and human systems (Watts et al., 2015). The need to reduce carbon emissions means that all aspects of industry, including the healthcare sector, are having to be more sustainable. The healthcare sector in the UK is the largest carbon emitter due to the size and scale of services offered. Healthcare staff are at the forefront of creating a more sustainable healthcare system yet widespread inaction exists (Watts et al., 2015).

To date there has been significant research and debate around those who are morally disengaged with climate change (Gifford, 2011; Heald, 2017; Peeters et al., 2019). Swim et al. (2009) suggest that there are various means of moral disengagement (Woods, Coen and Fernandez, 2018) due to the downplaying of distant or future risks (Taylor et al. 2014), mistrust of evidence (Petersen, Vincent and Westerling, 2019) or by the strength of social norms (Dunphy, 2014).

Despite the attention on those who are disengaged, there is emerging evidence to suggest that there are healthcare professionals who are morally engaged, some of whom actively participate in pro-environmental behaviours at home and at work. There are also some who are prevented from action due to either the contextual and structural barriers or the lack of certainty regarding the actions they could take (Griggs, Fernandez and Callanan, 2017). However, there is little primary research exploring the private motives and influential factors, such as values, beliefs and norms that have stimulated pro-environmental behaviour amongst UK healthcare staff (Richardson et al., 2015). Therefore, this research sought to make connections between values, beliefs, norms and pro-environmental behaviour amongst NHS staff. The VBN theory had not

been used within a UK healthcare setting therefore this research, conducted in 2018, was the first of its kind.

Stern (2011) documents the importance of psychology in the mitigation of climate change and recognises that to change action and behaviours firstly requires an understanding of values, beliefs and social structures. The study of pro-environmental psychology has gathered momentum over the past 50 years and now forms a discrete sub-discipline of the wider domain of environmental psychology (Brown, 2017). Pro-environmental psychology has involved the study and dissemination of how and why people change their behaviour to become more environmentally sustainable (Brown, 2017). Despite the growth in environmental psychology there is a scarcity of research within UK healthcare settings which is of utmost importance given the carbon footprint of the NHS and the increasing pressure to cut carbon emissions. The Intergovernmental Panel on Climate Change predicted that the UK is not on track to meet its carbon budget for 2023-2027 (IPCC, 2019), therefore it is vital for employers, managers and policymakers alike to understand the components that lead to pro-environmental behaviour and the potential for spillover between home and work.

Behavioural spillover

Positive behavioural spillover within this context is the belief that by adopting one new pro-environmental behaviour an individual will adopt a second pro-environmental behaviour (Thørgersen, 1999 cited by Spence, Leygue, Bedwell and O'Malley, 2014). Research to examine behavioural spillover is not conclusive and there is evidence to indicate both a positive spillover (Elf, Gatersleben and Christie, 2019) and a negative spillover (Truelove et al., 2014). The evidence

in favour of a positive spillover suggests the spillover is often linked to small and easy to adopt behaviours, which have a ripple effect within the same context (Lanzini and Thørgersen, 2014). For example, Van der Werff, Steg and Keizer (2014) found that by adopting a fuel-efficient driving style, individuals developed an environmental self-identity which then prompted them to reduce their meat consumption. The evidence in favour of a negative spillover suggests that pro-environmental behaviours are stifled and inhibited by the original behaviour (Nilsson, Bergquist and Schultz, 2017). For example, Truelove et al. (2014) found that people were less likely to take pro-environmental behaviours when on holiday because of the belief that they carry out these behaviours most of the time at home.

Nash et al. (2019) identified that those who are already engaged in pro-environmental behaviours are more likely to experience a positive spillover. Therefore, there may be justification to encourage people to become more engaged in their private lives, once pro-environmental behaviours become established and routine there is a stronger likelihood of those behaviours spilling over to other contexts such as work. Although Nash et al. (2019) found spillover between contexts rare, Littleford, Ryley and Firth (2014) found tentative evidence of positive behaviour spillover between contexts when the same item or trigger was present in both settings. For example, when there was a common defining feature between the home and work setting, a computer or light switch, that feature would act as a trigger to prompt behaviour. Similarly, positive spillover can also be enhanced when the employer promotes a pro-environmental ethos (Rashid and Mohammad, 2011, cited by Nash et al., 2017).

There is conflicting evidence regarding home and work behaviours, with some authors highlighting the difference in behaviours between home and work (Dunphy, 2014) and others highlighting the similarities of some behaviours across both settings (Tudor, Barr and Gilg, 2007).

At a time when many UK healthcare providers are attempting to cut carbon emissions it is important to establish the extent to which staff engage in private pro-environmental behaviours and the impact of factors such a values, beliefs and norms. If staff are firstly encouraged to make pro-environmental choices within their private lives, it may then be easier for these behaviours to be adopted within a work context (Reupert et al., 2016). Van der Werff, Steg and Keizer (2014) found a link between value orientation, pro-environmental behaviours and a sense of environmental self-identity, all of which may be important factors in positive spillover.

The community NHS Trust involved with this research have a vision and strategy designed to address one of the Trust's strategic goals to become more sustainable and to reduce its carbon emissions. Their strategy has seven steps to sustainable healthcare, two of which were linked to staff culture and wellbeing. The other five steps to sustainable healthcare addressed some of the contextual and structural elements within the organisation, such as creating low-carbon buildings and ethical, resource efficient supply chains. These five steps acknowledge that contextual barriers and situational constraints are often the factors that prevent staff from behaving pro-environmentally at work. While these barriers were not the focus of this research it is important to acknowledge the work that was occurring in parallel to the staff engagement.

The aim of the staff engagement steps was to inform, empower and motivate people to make pro-environmental behaviour changes. In 2015, the Trust launched their sustainable healthcare campaign as a means of engaging staff with the overall vision and strategy. The campaign designed to encourage and empower staff to make small adjustments to their life (predominantly at home but some aspects linked to work) that result in a reduction in their personal carbon footprint. The campaign encouraged staff to complete an activity and pledge to do something differently, for example, walking to work, or go meat free one day a week, and each

activity carried an educational message. Since its launch in 2015, over 1441 staff have volunteered to take part, in 2018 when this research was conducted this equated to 26% of the entire workforce.

The campaign aim was to develop a workforce that had a strong environmental self-identity with the hope that there would be behavioural spillover between home and work (Van der Werff et al., 2014). By approaching this situation with a *foot in the door* (FITD) mentality the Trust sought to achieve compliance with one small initial request acting as a catalyst for other pro-environmental behaviours (Nilsson, Bergquist and Schultz, 2016). When people are mindful about environmental issues from a personal perspective they are more likely to engage in a positive manner in other aspects of life (Peeters et al., 2019).

The following section is broken down to explore the VBN theory, including the history of its development and its uses across disciplines. The VBN theory is then broken down into its constituent parts which are explored in relation to the respective psychological theories. As this research needed to gather data on values, beliefs, norms and behaviours it was necessary to select previously validated measurement instruments (scales). With an abundance of measures available it was extremely important to select measurement instruments that would produce reliable and consistent results, that were appropriate for the research aims, and were suitable for the audience. Therefore, the next section will also provide detailed information about the measurement instruments and a clear rationale why they were selected for use within this research.

Value-Beliefs-Norms Theory

This research utilised Stern's (2000) VBN theory to explore engagement in a sustainable healthcare campaign. The VBN theory proposes that a person's value orientation affects their behaviour towards the environment, with beliefs and norms acting as mediators (Stern, 2000). The VBN takes the basic assumptions from the *norm activation model (NAM)* (Schwartz, 1968a). The NAM suggest that people are inherently altruistic, and that personal values are activated by certain conditions whereby individuals become aware of consequences and can ascribe personal responsibility. For example, an individual living in a densely populated city becomes aware of the ground level pollution caused by diesel engines. Local media report increased occurrence of respiratory problems amongst children in these areas. The individual feels compelled to act and have the personal capability to do so, therefore making a personal choice to buy an electric car. Stern, Dietz and Kalof (1993) recognised the value of the NAM but criticised the assumption that people are altruistic and care about the welfare of others. Stern et al. (1993) argue that altruism is just one of three value types and that egoistic and biospheric value types also exist. These value types are explored in more detail in the next section.

The research to date (Stern, 2000) suggests that pro-environmental values, beliefs and norms are all antecedents of pro-environmental behaviour. If one of these causal factors is weak or absent, then pro-environmental behaviour may not be enacted. According to Stern and Dietz (1994, p. 68):

> A strong value orientation may lead someone to seek information selectively or to attend selectively to information about the consequences of an environmental condition for valued objects, and therefore to develop beliefs about those consequences that will guide action.

The VBN theory has been heavily used within environmental psychology and many authors acknowledge the contribution it has made (Schultz, 2000; Turaga, Howarth and Borsuk, 2010). In addition, many authors from across the world and across disciplines have used this theory as a framework for their research, each experimenting with a variety of outcome measures to explore each element of the theory (Steg, Dreijerink and Abrahamse, 2005; de Groot and Steg, 2008; Choi, Yang and Kandampully, 2015; Chen, 2015). Turaga et al. (2010, p. 221) state that "the VBN model provides a sophisticated theory of how environmental behaviours are tied to deep-seated values orientations".

Despite the widespread use of VBN across a range of topics there are critics of the theory. Ryan and Splash (2012) provide an interesting critique of the VBN theory and caution researchers about the lack of inclusion or acknowledgement of the influence that external information sources on personal beliefs. They stress the importance and impact of social media and news media and recognise that this may be a weak link in the theorised causal chain of the VBN. A Study by Sampei and Aoyagi-Usui (2009) in Japan found that a significant increase in media attention on climate change was positively correlated with an increase in public concern. They found that although media had a strong effect it was transient in duration, and as media coverage reduced the public interest waned. Ryan and Splash (2012) suggest that although value orientation is important in determining pro-environmental behaviour, the power of mass media may elicit behaviours that are not aligned to the value type.

Further limitations of the VBN theory include the lack of inclusion of social norms (Ghazali, Nguyen, Mutum and Yap, 2019; Lai, Tirotto, Pagliaro and Fornara, 2020) and perceived behavioural control (Fornara et al., 2020) which has led to the development of extended VBN models. Lind, Nordfjærn, Jørgensen and Rundmo (2015) highlight the importance and role of

situational constraints in the study of pro-environmental behaviours and acknowledge how a lack of attention to situational constraints may be a limitation of the VBN theory. Several authors who have used the VBN theory documents its ability to predict mostly low-cost and low-impact behaviours (Zhang, Sheng, Zhang and Zhang, 2020) which could be a criticism. However, this model fits well with the aims of the sustainable healthcare campaign used within this research as the Trust aim was to promote small and achievable pro-environmental behaviours within a private-sphere. The following section explores each stage of the VBN theory and the respective measurement tools used.

Values.

Early work in the 1990s involving university undergraduates in New York state revealed a lack of clarity in measurement instruments assessing values (Stern et al., 1993), which prompted much of the later research. Stern et al. (1995) went on to use the three value types in research amongst English-speaking households in Virginia and found the biospheric value type was the most significant predictor of environmental concern and awareness of consequences.

Later that decade Dietz et al. (1998) started to develop a shortened scale which consisted of 15 items compared to larger scales used earlier in the decade (Stern et al., 1995). The primary aim of this research was to unpick the altruistic and biospheric value types to see if they were distinctly different or if they should be combined under the umbrella term of *self-transcendence* (Dietz et al., 1998). They recommended that researchers specifically interested in environmental issues should treat the altruistic and biospheric value types separately.

Generally, pro-environmental behaviour is positively correlated with the altruistic and biospheric value orientation, and negatively correlated with egoistic value type, meaning those with egoistic orientation are less like to act in a pro-environmental manner (de Groot and Steg, 2008). However, Stern et al. (1993) acknowledged that all three value types have the potential to be misinterpreted and all have the potential to produce environmental concern under different conditions. For example, an individual may develop environmental concern only when hazardous waste poses a threat to them or their possessions. Similarly, someone may be compelled to campaign against environmental degradation only to better their social standing and impress peers. In addition, an individual may campaign for the protection and preservation of biodiversity, but this may be inextricably linked to human welfare.

Value orientation can be informative to environmental research as it allows researchers to understand the basis for motives (Ryan and Splash, 2012). Values that stem from either egoistic, biospheric or altruistic origins may determine how the individual formulates and structures their environmental beliefs. Policy makers and organisations must appreciate the importance of values in any behaviour change situation (Gifford, 2011) and tap into values that are most likely to elicit behaviour change. To understand values, one must have a tool or instrument that delivers accurate data on value type and therefore the next section examines the history and development of the *Universal Values Scale*.

Universal Values Scale.

The first values scale was developed by Schwartz' (1992) and included a 56-item scale based on 10 value types. The value types were grouped into four higher order categories intended

to represent conceptual boundaries to where one category ends, and another begins. These higher order categories of values included *self-enhancement* which was linked to hedonism, achievement and power. *Conservation* contained values pertaining to security, conformity and tradition. *Openness to change* represented stimulation and self-direction. Finally, *self-transcendence* incorporated values linked to benevolence and universalism. Schwartz (1992) assimilated evidence from 20 countries and found that the meaning associated with these value types was consistent and he recommended that the values were sufficiently established to serve as a basis for future research.

Many measurement instruments used today are based in some way on this seminal work and retain facets of his original theory. One such example is Stern and Dietz (1994) who performed early research using Schwartz' (1992) 56-item scale and found it challenging and unwieldy to administer due to the length and number of items. Stern and Dietz (1994) sought to amalgamate the four higher order categories identified by Schwartz (1992) (*self-transcendence, self-enhancement, openness to change and conservation*) along with the egoistic, altruistic and biospheric value types from their own research. The result was a 34-item scale which had strong predictive qualities between the biospheric and egoistic value types and behaviour (Stern and Dietz, 1994). When subjected to factor analysis the new 34-item scale illustrated striking alignment to the four higher order categories, factor one contained the new biospheric values and aligned to self-transcendence, factor two contained egoistic values and aligned to the self-enhancement cluster, factor three contained values linked to openness to change, and factor four represented the conservation cluster with social-altruistic values.

Stern et al. (1998) set about creating a short values inventory, this continued to use the same four higher order categories identified by Schwartz. The 15-item scale produced robust

results with good levels of internal consistency, the scale also proved to be effective at predicting environmental behaviour. Stern et al. (1998) found this shortened scale to be very effective in situations where the 56-item scale was not practical or feasible.

Steg et al. (2005) were particularly interested in the egoist, altruist and biospherist value types and decided to modify the shortened scale developed by Stern et al. (1998). They used three categories (egoist, altruist and biospherist) instead of the Schwartz (1992) higher order categories and created a 12-item scale, consisting of three sub-scales with each containing four items representing a value orientation. The 12-item scale had a Cronbach alpha of $\alpha = 0.65$ for the egoistic value type; $\alpha = 0.72$ for the altruistic value type; and $\alpha = 0.83$ for the biospheric value type (Steg et al., 2005).

De Groot and Steg (2008) continued to test and validate their own 12-item scale (Steg et al., 2005) and found that each of the value types could be clearly distinguished. Each item within the sub-scale correlated positively to other items within the sub-scale. Altruistic and biospheric sub-scales were positively correlated, and as expected the egoist sub-scale was not correlated to items within the altruist or biospherist sub-scale. De Groot and Steg (2010) continued to find that value orientation had significant predictive power around pro-environmental intentions. Due to the relevance of this 12-item scale to the three values types under review and the suitable length of the scale it was adopted for use within this research. The next section examines the beliefs elements of the VBN theory and the measurement instrument available.

Beliefs.

According to Ajzen and Fishbein (1980) people hold certain beliefs about themselves, the environment in which they live, other people and objects in general. By attributing qualities and characteristics towards an object people develop an attitude towards that object. Ajzen and Fishbein (1980) go on to explain that an attitude is the outward expression of a person's like or dislike for an object, therefore attitude is always driven by an underlining belief about someone or something. Some beliefs may endure over time, some may be transient as new life experiences alter viewpoints. *Beliefs* in the context of the VBN theory encompass an individual's ecological worldview, and their beliefs associated with humanity's influence and control over the natural world (Dunlap, van Liere, Mertig and Jones, 2000). Beliefs tend to be far less stable than values, beliefs tend to vary depending on the aspect of life in question whereas broad values tend to remain consistent across all aspects of life (Steg et al., 2005).

Corraliza and Berenguer (2000) proposed a situational model that recognises the importance of the interaction between personal (beliefs) and situation (physical environment) variables in influencing behaviour. They infer that although an individual may have a strong ecological worldview there may be real situational constraints that inhibit action. This can be seen in the work of Anåker, Nilsson, Holmnes and Elf (2015) who found that although nurses may have pro-environmental beliefs, they may be unable to engage with sustainable healthcare practices due to the pressures and demands of the job.

Research on environmental beliefs can be traced back to two influential theoretical positions: the *social dilemmas* perspective and the *norm activation model* which are explored in the following sub-sections (Corraliza and Berenguer, 2000).

Social Dilemmas.

A *social dilemma* can be defined as a decision between personal gains which result in collective harm, or personal sacrifices which result in collective benefit (Bonnes and Bonaiuto, 2002). Social dilemmas present individuals with choices about personal versus collective gains. A personal choice to act in self-interest or to act in common good will be influenced by several factors which include value type, their beliefs about the choice in question, and the norms that have been socially and personally constructed (Stern, 2000).

There are many social dilemmas perspectives across disciplines but the work of Hardin (1968) who presented a *commons dilemma* is frequently cited within environmental psychology (Bonnes and Bonaiuto, 2002). Hardin (1968) presented the *tragedy of the commons* which illustrates a social dilemma linked to the use and misuse of common/collective resources. This is when an individual is tempted by short-term gains that are to the long-term detriment of the wider community. This type of social dilemma is associated with decision making when an individual is presented with short-term and long-term consequences that conflict with one another (Scott, Amel, Koger and Manning, 2016). Conflict may arise when there is a negative short-term impact, compared to a positive long-term impact. For example, an individual may have to decide between the short-term cost implications of purchasing a more energy efficient washing machine, compared to the long-term reduction in energy and the cost benefits associated with this.

The social dilemmas perspective taps into beliefs about what is important to self and others and Corraliza and Berenguer (2000) found that in most cases individuals will consider others and the long-term implications. However, this scenario is challenged when people feel that they are

making short-term sacrifices when those around them are not. This is a classic *commons dilemma* whereby people look to their peers, neighbours or even those in the media to see what actions they are taking (Hardin, 1968). If it appears that nobody is making a sacrifice, and in fact everyone is making short-term gains then it is a very powerful motivator to avoid being left out and to join the short-term gains.

Norm Activation Model (NAM).

Schwartz' (1977) *norm activation model (NAM)* adds further understanding to the complexity of belief systems when it comes to pro-environmental behaviour. Awareness of consequences was explored by Schwartz (1977) in the NAM and he suggests that values affect behaviour but only if they are activated. For activation to occur, an individual must: become *aware of consequences* of action and inaction; become aware of their own ability to act and to have a personal sense of responsibility, known as the *ascription of responsibility*.

Awareness of Consequences (AC) is described as an individual's awareness of the negative consequences of inaction and the impact this may have on the things they value (de Groot and Steg, 2009). This awareness of consequences is an important first step which informs decisions to either engage or not engage with pro-environmental behaviour. If awareness of consequences is low, then pro-environmental behaviour is unlikely to occur. This may be linked to the "endemic blindness" described by Grootjans and Newman (2012, p. 81) to the seriousness of consequences which may result from climate change. Heider (1958) refers to this as *foreseeability*, the ability to imagine consequences that may occur either directly or indirectly because of personal actions,

however to do this the individual must have the cognitive ability to understand causality and make coherent links between causality and consequences.

Ascription of responsibility (AR) is an individual's belief in their ability to reduce such risks or threats (Steg et al., 2005) and is closely linked to Ajzen's (1991) perceived behavioural control element of the TPB. Ascription of responsibility has a strong basis in Rotter's (1966) theory of the internal and external *locus of control*. This is the extent to which an individual believes they have control and responsibility over life events or circumstances that occur around them. An internal locus of control is associated with an ability to ascribe personal responsibility. These individuals believe that there is a strong causal relationship between their own behaviour and the life event or circumstance in question. In this instance it is an individual's belief that their own behaviour is impacting upon the environment. An external locus of control is associated with a belief that life events or circumstances are beyond their own control, therefore there is no causal link between behaviour and the impact on the environment.

Beliefs associated with pro-environmental actions and behaviours are of great importance but are complex in nature (Bonnes and Bonaiuto, 2002). The complex series of psychological processes at play, ranging from behavioural to subjective normative beliefs (Ajzen and Fishbein, 1980), to awareness of consequences and ascription of responsibility (Schwartz, 1977), all influence behaviour and actions. With short-term and long-term implications often in conflict (Hardin, 1968) and situation constraints (Corraliza and Berenguer, 2000) adding to beliefs about the value of an outcome it is extremely important to include measurements of beliefs when assessing pro-environmental behaviour.

The next section explores the development and use of two measurement instruments of environmental beliefs – *The New Ecological Paradigm Scale* (Dunlap and van Liere, 1978) and

the *Awareness of Consequences, Ascription and Responsibility and Personal Norms Scale* (Steg et al., 2005) and provides a rationale as to why they were selected for use in this research.

New Ecological Paradigm Scale.

Dunlap and van Liere (1978) became interested in environmental degradation and turned to the highly influential work of Leopold (1949) and his *land ethic theory*. Leopold (1949) documented the commonly held belief amongst people at the time that land was a commodity for use and consumption, it held economic value and it was acceptable to alter and control it for the greater good of mankind. Leopold (1949) was ahead of his time and challenged this attitude towards the environment and suggested that mankind belonged to nature and should treat the environment with love and respect.

Meadows, Meadows, Randers and Behrens (1972) published their seminal work *Limits to Growth* while Dunlap and van Liere were starting their work on ecological world views. The *Limits to Growth* (Meadows et al., 1972) illustrated the impending environmental crisis and warned that human growth would exceed the earth's capacity within 100 years. In their 20-year update *Beyond the Limits*, Meadows, Meadows and Randers (1992) found that many limits had already been exceeded. These influential authors of the time further compounded the need to capture beliefs within a meaningful measurement instrument.

The original *New Environmental Paradigm* (NEP1) as it was called then (Dunlap and Van Liere, 1978) attempted to capture beliefs or worldviews regarding the natural world and humanity's interaction with it. The scale consisted of 12 items which tapped into three major themes (or hypothetical facets as they would later be known): the reality of limits to growth; the

need to preserve a balance of nature; and the rejected notion that nature exists solely for human consumption.

In a reflective article Dunlap (2008) provides a commentary on the popularity and criticisms of the scale and the fact that it had become one of the most widely used measurement instruments of environmental concern. Dunlap (2008) suggested that some of the concepts contained within the original scale were seen to be quite radical for the time (late 1970s), but as public awareness grew so did the acceptance and use of the NEP1. During the 1980s and 1990s the scale was used extensively (Hawcroft and Milfont, 2010) across a range of disciplines and countries (Albrect, Bultena, Hoiberg and Nowak, 1982; Schultz and Zeleney, 1998).

In his later paper Dunlap (2008) reflects on the rapid societal and perceptual changes that occurred towards environmental concern in the 1980s and 1990s. Dunlap (2008) reported that environmental concern in the 1970s was very much a local problem, centred around industrial processes that had an impact on local communities such as localised air quality issues, resource exploitation and *not in my backyard (NIMBY)* mentality (Wexler, 1996). In more recent years, environmental concern has become a far bigger issue, with the emergence of climate change and its associated impacts (Dunlap, 2008).

The NEP1 was subject to modification over the years and Pierce, Lovrich, Tsurutoni and Abe (1998) created a short six-item version of the NEP1. They were interested in environmental beliefs amongst affluent Japanese and American citizens and how these beliefs correlated to political beliefs. The six-item scale may seem appealing but Hawcroft and Milfont (2010) examine the use and abuse of the NEP1 concluding that the six-item scale was flawed. They found that, unlike the original scale, the shorted scale did not contain any items pertaining to ecological crisis,

and as a result the mean scores were much higher in studies using this format, meaning that short scales produced results that were more biased towards a pro-environmental worldview.

Following its creation in 1979 it was not until the year 2000 that Dunlap and his associates decided to officially modify the original scale (Dunlap et al., 2000). It was at this point that the NEP1 scale was significantly modernised to remove outdated language and concepts from the original scale, and to reflect the need for greater psychological and political focus. The *New Ecological Paradigm Scale* (NEP) was released, and it has since been validated within a wide range of environmental research settings (Cordano, Welcomer and Scherer, 2003; Steg, et al., 2005; de Groot and Steg, 2008). Hawcroft and Milfont (2011) strongly recommend the revised version with 15 items as opposed to the shorter versions that were developed during the late 1980s and early 1990s.

The revised NEP built upon the original scale and included five hypothesised facets. The first facet was associated with the limits to human growth and the notion that the earth has finite resources. The second facet was anti-anthropocentric in nature, anthropocentrism being the belief that nature exists purely for use of humans. The third facet was concern for the fragility of nature and recognition that human activity is impacting negatively on other species. The fourth facet was the rejection of exceptionalism which refers to the belief that humans are not exempt from the laws of nature. The fifth and final facet was the possibility of an impending eco-crisis and that without mitigation human action would irreversibly damage nature (Dunlap et al., 2000).

According to Dunlap and Van Liere (1978) the original NEP1 was to be treated as a unidimensional scale, arguing that all items led to the creation of a coherent worldview. Upon revision Dunlap et al. (2000) reaffirmed that the new scale also achieved a high degree of internal consistency with a Cronbach alpha of $\alpha = 0.83$ and recommended that the scale should remain a

single measure of ecological worldview. The dimensionality of the NEP has been called into question over the years but most notably by Amburgey and Thoman (2011) who argue that a scale with multiple hypothesised facets is in fact multidimensional. Amburgey and Thoman (2011) found that most previous studies (including the original work from Dunalp and van Liere, 1978) had used exploratory factor analysis which had in turn confirmed the unidimensionality of the scale. However, Amburgey and Thoman (2011) experimented with several different methods of analysis and found that confirmatory factor analysis when applied to the NEP produced five first-order dimensions, each empirically distinct but all interrelated. This research adhered to the original guidance from Dunlap et al. (2000) to treat the NEP as a unidimensional scale, however the dimensionality of the scale was an issue explored during the data analysis and is reviewed within the discussion chapter.

Awareness of Consequences, Ascription of Responsibility and Personal Norms Scale.

A plethora of measurement instruments exist that seek to measure environmental beliefs such as awareness of consequence, ascription of responsibility and norms (Ryan and Splash, 2012). Scales such as the *General Awareness of Consequence (GAC) scale* are effective but only address one element (Stern et al., 1995) but Steg et al. (2005) have successfully designed and validated a 21-item instrument designed to examine beliefs around awareness of consequences (AC) and ascription of responsibility (AR), along with personal norms (PN).

AC and AR were described in the previous section, but Personal Norms (PN) are associated with the feeling of obligation to act pro-environmentally, influenced by the relative importance of the valued things/people/places; the more important the thing/person/place is, the stronger the

moral sense of duty to act (Schwartz, 1977). When an individual violates their moral sense of duty to act, they may experience feelings of guilt, frustration and low self-esteem, or a general state of cognitive dissonance (Griggs et al., 2017). To avoid these feelings individuals will either be compelled to act, or in cases where the perceived personal costs (social / psychological / physical / financial) are too great, the individual may take steps to self-exonerate, to play down or to neutralise the activated norms. In doing so a state of cognitive consonance is achieved (Griggs et al., 2017).

The AC, AR and PN scale (Steg et al., 2005) was selected based on its suitability to address AC, AR and PN within one scale. Despite its apparent suitability there is a sparsity of literature examining its effectiveness and contribution to the VBN theory, and subsequent validation has come from the same authors (de Groot and Steg, 2008; de Groot and Steg, 2009). In de Groot and Steg's (2009) later research they chose to use the AC and AR questions and in 2009 they reported findings from five small studies each using variations to the AC, AR and PN tool in several different contexts, all of which produced very good internal consistency (de Groot and Steg, 2009). Turaga et al. (2010) found that only a handful of studies that used the VBN tested the full set of causal relationships in the theory, one of which was Steg et al. (2005) and for this reason the AC, AR and PN scale was adopted for use within this research however it was adopted with caution.

Norms.

Norms can be viewed in terms of *social norms* and *personal norms*, and both types require some sort of emotional arousal to become activated (Schwartz, 1977). Social norms also known as subjective norms are not only the direct influence of the social environment on behaviour but also

the person's perceived influence (Ajzen and Fishbein, 1980). Personal norms are formed based on a person's belief that something is morally right, the subsequent behaviour becomes an intrinsic part of their personal identity. The motivation and desire to act is based on a set of internally generated thoughts and ideas that are self-reinforcing (Schwartz, 1977). Norms can be context specific and unlike values which remain relatively stable, norms can be situational.

Motivations Towards the Environment Scale.

The AC, AR and PN scale (Steg et al., 2005) discussed previously did contain some items on personal norms. However, as that scale had not been extensively tested it was decided that another measurement instrument that examined personal norms should be included to ensure that enough data was collected. Personal norms were explored further specifically examining personal motivation using the *Motivation Towards the Environment Scale (MTES)* by Pelletier et al. (1998). Pelletier et al. (1998) found that environmental knowledge was an essential pre-requisite for action, and at the time there was an abundance of literature aiming to educate the public, along with books, pressure groups and environmental programmes. Despite the availability of information on the need for pro-environmental action there was widespread inaction, and this led Pelletier et al. (1998) to explore other factors such as attitude, behaviour and crucially motivation.

Pelletier et al. (1998) presented the outcome of four studies designed to construct and validate the MTES. The initial scale was created following interviews with 431 University students in Canada to find out the reasons why they engage in pro-environmental behaviour. This generated 60 items which were then reduced to 24 items following factor analysis (four items per sub-scale). Initial indices of internal consistency were positive with Cronbach alphas ranging from $\alpha = 0.71$ –

0.92 for all sub-scales. The 24-item scale was then tested with 544 randomly selected people living in Ontario. Once again, the Cronbach alpha scores were good ranging from $\alpha = 0.79 – 0.89$ and they also found satisfactory test-retest reliability after five weeks and factor analysis supported all sub-scales with factors loading on all six of the different motivation types.

The MTES has since been validated in a wide variety of cultural and geographical regions from the Netherlands (de Groot and Steg, 2010) to Canada (Aitken, Pelletier and Baxter, 2016) to Belgium (Boeve-de Pauw and van Petegem, 2017). Villacorta et al. (2003) found that the MTES had good construct validity ($\alpha = 0.75 – 0.89$) and made a valid contribution to the growing body of research correlating pro-environmental motivation and behaviour. De Groot and Steg (2010) compared the predictive strength of value orientation and motivation type in predicting pro-environmental behaviour. They found that value orientation was in fact a better predictor of behaviour than motivation type. They suggest that behavioural intentions are influenced by multiple factors and use of the MTES alone was not advisable, therefore use of the MTES alongside the other scales described here was deemed appropriate. Boeve-de Pauw and van Petergem (2017) also used the MTES in conjunction with an array of other instruments and found the MTES valid and reliable in correlating motivation type and behaviour amongst school age children.

Behaviours.

Stern (2000) highlights the fact that there are significantly different types of pro-environmental behaviour, and although much of the research prior to the year 2000 puts all pro-environmentalists together in an undifferentiated category Stern (2000) seeks to differentiate.

According to the VBN theory (Stern, 2000, p. 409), there are four types of environmentally significant behaviour "environmental activism; non-activist behaviour in the public-sphere; private-sphere environmentalism; and behaviour within organisations".

Environmental activism is taken on a personal level and results in committed environmental action. This may include petitioning government and organisations; engaging in more difficult or costly (time / money / effort) environmental behaviour; joining and/or contributing to environmental organisations (Dono, Webb and Richardson, 2010). Non-activist behaviour in the public sphere could describe those who are supportive of public policy by pro-environmental voting or adhering to pro-environmental rules set out by government (Stern, 2000). Private-sphere environmentalism is the decision making that individuals can make regarding their purchasing habits, use of environmentally important goods, and waste disposal (Steg et al., 2005). Finally, other environmentally significant behaviours such as those within organisations, according to Stern (2000), can be the most influential type of pro-environmental behaviour when key individuals influence the way that the organisation operates. This could be pro-environmental decisions linked to manufacturing processes, materials used, ethical procurement etc, that then have a direct and positive impact upstream.

Pro-Environmental Behaviour Scale.

To date, Stern (2000) has not designed and validated a scale to assess the four behaviour types, therefore it was necessary to find an alternative scale to measure pro-environmental behaviour. There are many measurement instruments available but many of which lack reliability for example, Maloney and Ward (1973, cited by Kaiser, 1998) were criticised for a self-

contradicting measure of behaviour, and Sia, Hungerford and Tomera (1986) were found to produce biased results as their scale appealed to subjective norms and social desirability. Therefore, Markle's (2013) *Pro-environmental Behaviour Scale (PEBS)* was used and reliability tests found an overall Cronbach alpha of .80. This tool offers four simple categories related to conservation, environmental citizenship, food and transportation which according to Markle (2013) are the those that are known to have the greatest impact on the environment. Since its creation the scale has been used in part by Prati, Albanesi and Pietrantoni (2015) who used the conservation sub-scale only and found that conservation behaviour was largely habitual rather than being influenced by beliefs and norms. Diessner, Genthôs, Praest and Pohling (2018) found that Cronbach alphas for conservation $\alpha = 0.57$, environmental citizenship $\alpha = 0.45$ and transportation $\alpha = 0.40$ were low with only food receiving a respectable score $\alpha = 0.74$. The overall Cronbach alpha was $\alpha = 0.70$ which is consistent with the present study (see measures section) and they found the PEBS to be an effective measure of pro-environmental behaviour.

In summary, this section has examined the individual components of the VBN theory and the respective measurement instruments that were selected to extract data for values, beliefs, norms and behaviours. The next section details the research aims and the research hypotheses.

Aim

To explore the factors (values, beliefs and norms) that have influenced engagement with a sustainable healthcare campaign.

Research Hypotheses

1. A biospheric value type will be associated with pro-environmental beliefs and personal norms.
2. Value type will predict the degree of engagement with pro-environmental behaviour: An egoistic value type will be linked to lower engagement; altruistic and biospheric value types will be linked to greater engagement.
3. Pro-environmental beliefs and personal norms will predict greater engagement with pro-environmental behaviour.
4. Pro-environmental beliefs and norms will mediate the relationship between value type and pro-environmental behaviour.

Method

Design

This study deployed an online questionnaire to gather data, which consisted of five previously validated measurement instruments to examine the different components of the VBN theory. The following sections will explore the participant demographics in more detail, along with the sampling procedure. The measurement instruments have already been introduced in the previous chapter however some of the more technical detail relating to each instrument is provided.

Participants

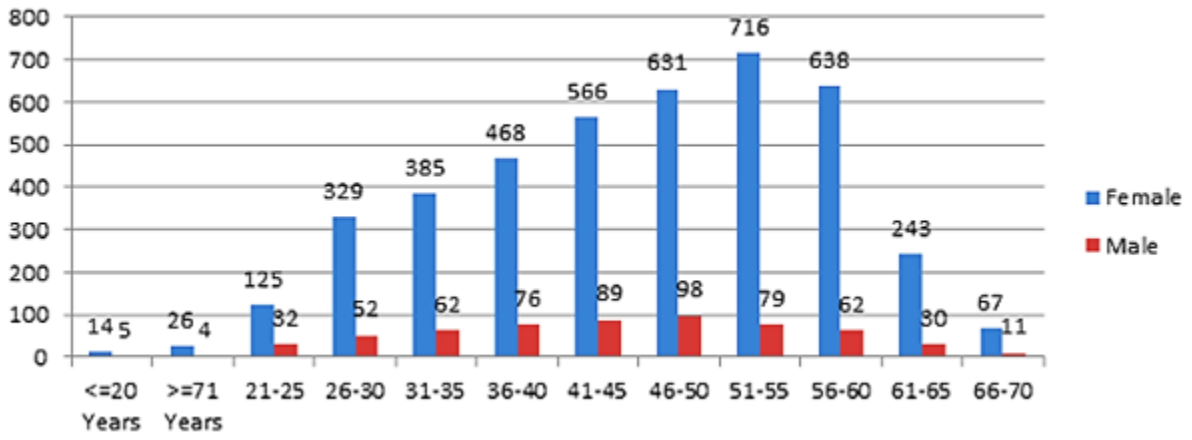
The total population size within the community NHS trust was around 5408 at the commencement of the project in 2018. Based on a G*Power (3.1.9.2) calculation with a 95% confidence level the target sample was 189 participants. The inclusion criteria were that participants had to be a member of staff within the trust, and willing to complete a questionnaire. The sample size was also checked by applying the rule of thumb *events per predictor variable (EPV)* which suggests that for each variable there needs to be 10 outcome events or participants (Peduzzi, Concato, Kemper, Holford and Feinstein, 1996). The present study had 19 variables which would indicate a total sample of 190 participants.

A total of 187 responses were received via *Qualtrics* along with 13 paper copies, totalling 200 responses. There were some responses that had to be discarded due to missing data (14 online and 4 paper copies) therefore the final number included for analysis was n=182. Female

participants made up the 82% majority of responses (*n*=150) with men representing 18% (*n*=32), this is very similar to the entire (*n*=5408) female to male staff percentages within the community NHS trust with female staff accounting for 78% (*n*=4208) of the workforce, and men 22% (*n*=600) of the workforce (Figure 3).

Figure 3

Community NHS trust staff demographic data by age and gender



Of those who responded 92% (*n*=169) had heard of the campaign, and 58% (*n*=107) had taken part in the campaign. Only 8% (*n*=15) had not heard of the campaign and 42% (*n*=77) had never taken part. It was good to see representation from staff who had and had not engaged with the campaign. The age and gender of participants can be seen in Table 8 and the years of service within the community NHS trust in Table 9.

Table 8

Responses by Age and Gender

Gender	Age	Frequency	Percent	Valid Percent	Cumulative Percent
Male	<30	5	15.2	15.2	15.2
	31-40	6	18.2	18.2	33.3
	41-50	13	39.4	39.4	72.7
	51-60	8	24.2	24.2	97.0
	>61	1	3.0	3.0	100.0
	Total	32	100.0	100.0	
Female	<30	14	9.3	9.3	9.3
	31-40	23	15.2	15.2	24.5
	41-50	44	29.1	29.1	53.6
	51-60	59	39.1	39.1	92.7
	>61	11	7.3	7.3	100.0
	Total	150	100.0	100.0	

Table 9

Years of service within the community NHS trust

Years	Frequency	Percent	Valid Percent	Cumulative Percent
<5 years	73	39.7	39.7	39.7
6-10 years	40	22.3	22.3	62.0
11-20 years	51	28.3	28.3	90.2
>21 years	17	9.2	9.2	99.5
Total	182	100.0	100.0	100.0

There were two incentives offered as part of the research. A gift (a reusable jute shopping bag) was available to the first 150 people to respond, in addition participants were offered the chance to be in a prize draw (to win a two-night, bed and breakfast stay on an Organic Farm in

Somerset). The shopping bags and the short break were donated for free to the project. The use of these incentives was designed to attract responses from a wide variety of staff, including those who were not interested or engaged with sustainable healthcare, this is supported by Singer and Couper (2008) who found that incentives can attract participation from people who may have otherwise chosen not to participate. This was successful as there was good representation from participants who had not heard of the campaign or engaged in any way.

Sampling Procedure

The survey was available to participants in both electronic and paper format. The paper copies were disseminated by staff at organisational events, training sessions and workshops. Participant access to paper copies was an important aspect within this project due to size and geographical area of the community trust, as many potential participants may not routinely have access to computers. Stamped and addressed envelopes were provided to ensure participants did not incur any personal costs.

The online version used *Qualtrics* software and was tested from 9th – 24th August 2018 with two University colleagues, the purpose was to ensure that all hyper-links were working correctly and to proof the questionnaire for any errors. This was also useful to test the closed webpage (via *PebblePad* software) which was created to contain the participant information sheet and the link to the questionnaire itself. The final questionnaire was distributed via an email to all staff via the campaign communications manager, via a trust twitter account, a trust wide news bulletin and a blog on the campaign webpages. The survey was open for a fixed period of four weeks from 24th September to 19th October 2018.

Measures

A questionnaire by means of survey research (Fink, 2005) was used to gather data from staff within the trust. All five measurement instruments (*Universal Values Scale; New Ecological Paradigm Scale; Awareness of Consequences, Ascription of Responsibility and Personal Norms Scale; Motives Towards the Environment Scale; and Pro-environmental Behaviour Scale*) were combined to create the *Sustainable Healthcare Questionnaire*. The first section collected some basic demographic data such as gender, job title, number of years of service etc. Sections two to six gathered data on each of the instruments, and section seven offered participants the chance to claim their gift and enter the prize draw. All items within the questionnaire were individually coded to ensure efficiency in the analysis phase. Qualtrics was used to gather the online responses due to the extensive functionality of the software, this allowed the order of the five measurement instruments to be randomised along with the order of the items within each instrument. This randomisation helped to reduce any risk of error or bias due to the order-effect of items and instruments (Shaughnessy, Zechmeister and Zechmeister, 2006). The order of the items and instruments within the paper questionnaires were jumbled manually by simply cutting and pasting the items and instruments to fall in a different order, this was done to reduce any bias by completing items and instruments in a pre-set order.

Universal Values Scale.

The *Universal Values Scale (UVS)* consisted of 12 items and participants were asked to use a Likert scale of 1-8 (*1 not important at all, 4 unsure, 8 supremely important*) to rate each item as

a *guiding principle in their life* (Appendix 8). Questions 1-4 were designed to examine egoistic tendencies, questions 5-8 examine the altruistic tendencies and finally, questions 9-12 examine the biospheric tendencies. Items 1-4 were reversed scored prior to analysis so that agreement with the egoistic statements received a low score. The mean for the whole scale was 6.4 indicating that participants rated the altruistic and biospheric statements as important and the egoistic statements not important. The Cronbach alpha for the sub-scales were: $\alpha = 0.71$ (egoist); $\alpha = 0.79$ (altruistic); and $\alpha = 0.86$ (biospheric), and all indicate an acceptable level of internal consistency.

New Ecological Paradigm Scale.

The NEP (Appendix 9) was a 15-item questionnaire which used a 5-point Likert scale asking respondents to *strongly agree (1), agree (2), neither agree nor disagree (3), disagree (4) or strongly disagree (5)*. Agreement with the odd numbers and disagreement with the even numbers indicate pro-environmental responses. All odd numbered items had to be reversed scored (R) before analysis to ensure the high scores were linked to pro-environmental responses.

This scale uses five sub-sections or as they are called by Dunlap et al. (2000) *hypothesized facets*. As discussed previously, the dimensionality was something that needed to be examined within this research, therefore the scale was examined firstly as a multi-dimensional scale. The Cronbach alpha for each of the hypothesized facets generally came out low and unacceptable: limits to growth $\alpha = 0.54$; anti-anthropocentrism $\alpha = 0.56$; fragility of nature $\alpha = -0.59$; rejection of exceptionalism $\alpha = 0.42$; eco-crisis $\alpha = -0.91$. This would indicate that the scale was not intended to be broken down into sub-scales or used multi-dimensionally. When the scale was considered as a whole the Cronbach alpha improved to $\alpha = 0.61$ and increased further to $\alpha = 0.76$ by removing items 3 and 15 prior to analysis. Dunlap et al. (2000) also found that the alpha improved

significantly when considering the scale as a whole rather than dividing into sub-scales and concluded that all 15 items could be treated as an internally consistent measuring instrument.

Awareness of Consequences, Ascription of Responsibility and Personal Norms Scale.

In the *Awareness of Consequences, Ascription of Responsibility and Personal Norms (ACARPN) scale* participants were asked to show the extent to which they *fully disagree (1), disagree (2), neither agree nor disagree (3), agree (4), or fully agree (5)*. The scale was divided into three sub-scales with items 1-6 seek to extract information about awareness of consequences, items 7-12 are around awareness of consequences, and items 13-21 examine personal norms. Items 6, 10, 12 and 19 had to be reversed scored (R) before analysis to ensure the high scores were linked to pro-environmental responses (Appendix 10). The Cronbach alpha for all sub-scales were good which suggests internal consistency: AC $\alpha = 0.79$; AR $\alpha = 0.79$; and PN $\alpha = 0.89$.

Motivation Towards the Environment Scale.

The fourth scale was the *Motivation Towards the Environment Scale* which asked participants *Why are you doing things for the environment?* Participants are asked to indicate the extent to which each item corresponds to their personal motives for engaging in environmental behaviours (Appendix 11) using a scale from: *does not correspond at all (1); does not correspond (2); unsure (3) corresponds moderately (4); corresponds (5); corresponds strongly (6); corresponds exactly (7).* Items 1-4 indicated an intrinsic motivation, items 5-8 suggested an integrated regulation, items 9-12 illustrated identified regulation, items 13-16 revealed introjected regulation, items 17-20 signalled an external regulation and 21-24 denoted amotivation (Boeve-de

Pauw and van Petegem, 2017). Items 17-24 had to be reversed scored (R) before analysis to ensure the high scores were linked to pro-environmental responses.

The Cronbach alpha for the first four sub-scales were very good: $\alpha = 0.88$ (intrinsic motivation); $\alpha = 0.89$ (integrated regulation); $\alpha = 0.82$ (identified regulation); $\alpha = 0.83$ (introjected regulation). However, the *external regulation* and *amotivation* sub-scales representing the negative motivation types produced negative Cronbach alpha of $\alpha = -1.101$ and $\alpha = -1.36$ respectively. The alpha did not improve at the prospect of any individual items being deleted, therefore the external regulation and amotivation sub-scales were included for analysis. Trobia (2011) suggests that when a negative alpha occurs it is when items within a scale are measuring different dimensions and recommends that it may be necessary to reverse score items in the opposite direction. These two sub-scales had already been reverse scored at the start of data analysis, therefore the reverse scoring was undone to see if the internal consistency improved, however this made no change to the scores. When considered all together the whole scale produced an alpha of $\alpha = 0.86$ which in theory would suggest good reliability and internal consistency. This increases again to $\alpha = 0.95$ when the externally regulated and amotivation sub-scales were removed completely. However, Taber (2008) cautions against using an overall alpha on a multidimensional scale.

It was necessary to go back to the original work of Pelletier et al. (1998) to examine if this scale was intended to be uni- or multi-dimensional in nature. It was clear from their research that sub-scales were intended to be used (Pelletier et al., 1998) and this is further verified by Villacorta et al. (2003) and Boeve-de Pauw and van Petegem (2017) who both used sub-scales in their analysis. Interestingly, Pelletier et al. (1998) report much higher Cronbach alpha for the externally regulated ($\alpha = 0.81$) and the amotivation ($\alpha = 0.83$) sub-scales compared to this research. It is

unclear why the reliability scores are negative within this research and at this stage the decision was to include these sub-scales for further exploration with correlation and factor analysis.

Pro-Environmental Behaviour Scale.

The final *Pro-environmental Behaviour Scale* consisted of four categories (conservation, environmental citizenship, food and transportation) and each had a series of statements and the participant was asked to use a combination of Likert or yes / no answers (Appendix 12). This instrument indicated the degree to which an individual exhibited pro-environmental behaviour with the highest possible score of 95 indicating a high engagement with pro-environmental behaviours, and the lowest possible score of 19 indicating a poor engagement with pro-environmental behaviours.

The Cronbach alpha for each of the individual sub-scales varied: $\alpha = 0.66$ (Conservation); $\alpha = 0.58$ (environmental citizenship); $\alpha = 0.81$ (food); and $\alpha = 0.37$ (transportation). These scores may suggest this scale should also be considered as one scale because the alpha increased to $\alpha = 0.75$ which demonstrates an acceptable level of internal consistency. Upon re-examination of Markle's (2013, p. 910) original work it was clearly documented that the intention was to produce an instrument that made "conceptual sense" rather than focus solely on generating high Cronbach alpha statistics. Markle (2013) defend the lower alpha scores, suggesting that larger scales tend to get higher scores and smaller scales can be more sensitive to a low number of items producing lower scores. When Markle (2013) performed a factor analysis of the scale it revealed four very clear factors linked to the four sub-scales, therefore the decision was made to proceed with sub-scales within this research to examine the correlation and perform factor analysis. Interestingly, there are two items linked to food and transportation that sit within the environmental citizenship

sub-scale. Markle (2013) performed factor analysis and found that these two items (increased consumption of organic produce and vehicle fuel efficiency) loaded on the citizenship factor instead of the expected food or transportation factors. Markle (2013) suggested that these items were perhaps viewed as markers of environmental citizenship.

Analysis

Prior to analysis it was necessary to reverse score any items within measurement instruments so that a higher score always indicated a pro-environmental response. Then by extracting descriptive data such as mean, variance and standard deviation on items, sub-scales and scales it allowed familiarisation with the data. Reliability tests were conducted on all scales and sub-scales. The Cronbach alpha was an excellent measure of internal consistency (Tavakol and Dennick, 2011) and the extent to which items measure the same concept or construct, and results were checked allowing some items to be removed to enhance the overall score. *Exploratory factor analysis (EFA)* according to Yong and Pearce (2013) was a useful means of comparing the theoretically driven structure and the actual empirical structure, to see if the scale was measuring what it was theoretically designed to do (Amburgey and Thoman, 2011). Reliability and EFA were performed as part of the quality assurance checks prior to analysis.

The first stage of analysis was to perform *Pearson's correlation* for hypothesis 1. Correlation was an effective means of establishing relationships between variables and while it did not describe causality or the direction of the relationship, it was a reliable way to see if polarity existed (Field, 2018).

Linear regression analysis was a useful parametric technique to predict strength and relationship between variables (Field, 2018) and was necessary for hypotheses two and three. *Hierarchical regression* was used based on Stern et al. (1999) VBN theory, whereby variables are entered in a theoretically driven order. The predictors were the three sub-scales of the UVS (egoistic, altruistic and biospheric), the NEP (as a single item), the three sub-scales of the ACARPN (Awareness of Consequences, Ascription of Responsibility and Personal Norms) and the six sub-scales of the MTES (Intrinsic, Integrated, Identified, Introjected, Externally Regulated and Amotivation) entered in order.

The predictor variables were entered in the following hierarchical order: model one contained egoistic, altruistic and biospheric subscale means; model two NEP scale mean; model three ACARPN sub-scale means; model four intrinsic, integrated, identified, introjected, externally regulated and amotivation sub-scale means. A total of five separate regressions were completed, the first used the pro-environmental behaviour sum as the outcome variable, then the remaining four regressions used each of the pro-environmental behaviours contained within the PEBS subscales as outcome variable (conservation, environmental citizenship, food and transportation).

Mediation analysis (Hayes and Rockwood, 2017) was an effective means of examining the causal relationship and was necessary for hypothesis four. Stern at al. (1999) and Steg et al. (2005) tested the VBN theory and confirmed that all variables were significantly linked to the next variable in the causal chain. They found that the causal structure of the VBN theory was correct and confirmed that M_1 (beliefs) mediates between X (values) and M_2 (norms), M_2 (norms) mediates between M_1 (beliefs) and Y (behaviours). Examining a pre-determined causal chain can limit

analysis therefore the serial multiple mediator model was used, as this explores all possible pathways to find the strongest causal chain.

Ethical Considerations

Conducting safe and ethical research is central to protecting the people who take part in research (Health Research Authority, 2019). To ensure the safe and ethical conduct of this project approval from the University Ethics Committee (V:\075\Ethics\2017-18) and the Health Research Authority (IRAS project ID: 242332) were obtained in April and July 2018 respectively.

A communications manager within the NHS Trust held all participant details, and these were not shared with the researcher. Participants were sent a link to the participant information sheet (Appendix 13) and the online survey. The researcher only had access to the completed, anonymous questionnaire. Participants were offered the option of providing their email address if they wanted to claim their gift and enter the prize draw. Participants were also asked if they wanted to receive a summary report of the research towards the end of 2019 which is recommended practice according to the Health Research Authority (2018). Consent was implied through completion and return of the questionnaire. Confidentiality was upheld by storing questionnaire data in a password protected area and paper copies in a locked filing cabinet. All questionnaire responses were fully anonymised for analysis and the final write up.

Results

Descriptive Statistics

Universal Values Scale.

The mean scores for each of the value types can be seen in Table 10. The highest mean scores featured in the altruistic sub-scale 7.03, with the biospheric sub-scale receiving the middle score of 6.84 and the egoistic sub-scale receiving the lowest score of 5.36. This may indicate that the altruistic statements were rated with higher importance amongst those who responded. The egoistic statement in item four *Influential, having an impact on people and events* consistently produced skewed data. The raw mean for this item before recoding was 5.75 indicating agreement with this statement. It is possible that within a healthcare context that this statement could be interpreted as having a positive impact and being influential in a positive way.

Table 10

Universal Values Scale Descriptive Statistics

	N	Minimum	Maximum	$\bar{x}$	*SD*
UVS (whole scale)	182	4.44	8.00	6.41	.77988
Egoistic subscale	182	1.00	8.00	5.36	1.36885
Altruistic Subscale	182	3.75	8.00	7.03	.90188
Biospheric Subscale	182	4.25	8.00	6.84	.99295

New Ecological Paradigm.

The overall mean of responses for the NEP (Table 11) was 3.51 for the whole scale, which is only just on the upper side of neither agree nor disagree, suggesting no powerful pro

-environmental responses and more so neutral responses. Two items within the scale produced interesting results: item three *When humans interfere with nature it often produces disastrous consequences* had a mean score of 3.92 before recoding which indicates disagreement; and item 15 *If things continue on their present course, we will soon experience a major ecological crisis* had a mean score of 4.07 before recoding which indicates disagreement. Both statements have powerful wording such as disaster and crisis and this may be linked to responses.

Table 11

New Ecological Paradigm Scale

	N	Minimum	Maximum	$\bar{x}$	*SD*
NEP Mean	182	2.33	4.47	3.51	.37022

Awareness of Consequences, Ascription of Responsibility and Personal Norms.

The mean score for the ACARPN scale was 3.88 which as before is only just on the upper side of *slight agreement*, suggesting no powerful pro-environmental responses and more neutral responses. The AC subscale had the highest mean indicating that awareness of consequences was generally high (Table 12).

Table 12

Awareness of Consequences, Ascription of Responsibility and Personal Norms Scale

	N	Minimum	Maximum	$\bar{x}$	*SD*
ACARPN (whole scale)	182	2.54	4.93	3.88	.46905
Awareness of Consequences	182	2.00	5.00	4.04	.50555
Ascription of Responsibility	182	2.33	5.00	3.72	.57047
Personal Norms	182	2.22	5.00	3.87	.58165

Motives Towards the Environment Scale.

The mean for the MTES scale overall was 4.65 which as before is only just on the upper side of 'neither agree nor disagree', suggesting no powerful pro-environmental responses and more neutral responses. The raw mean scores (before recoding) for item 19, 20, 23 and 24 were all high indicating agreement with the statements. The mean for item 19 was 5.04 and item 20 was 4.67, both were linked to social perceptions and while individuals may exhibit an internal motivation this may also indicate concern and therefore motivation that originates externally. Mean scores for item 23 was 4.47 and item 24 was 5.01, both items are linked to a sense of futility and once again while participants may generally display internal motivation there may be an underlying sense of futility underpinning actions. Descriptive statistics for the MTES subscales scale can be seen below in Table 13.

Table 13

Motives Towards the Environment Scale

	N	Minimum	Maximum	$\bar{x}$	*SD*
MTES (whole scale)	182	2.17	6.04	4.65	.70082
Intrinsic	182	1.00	7.00	5.14	1.6639
Integrated	182	1.00	7.00	4.82	1.35680
Identified	182	1.25	7.00	5.49	1.01084
Introjected	182	1.00	7.00	4.77	1.35997
Externally Regulated	182	1.50	5.57	3.93	.52197
Amotivation	182	2.25	5.50	3.75	.50442

Pro-environmental Behaviour Scale.

The PEBS data were analysed in two ways, the first was to take a mean score of 3.22 and the second was to take a sum of all scores, and the average sum was 62.79. The lowest sum was 34 and the highest was 89 (Table 14).

Table 14

Pro-environmental Behaviour Scale

	N	Minimum	Maximum	$\bar{x}$	*SD*
PEBS (whole scale) Mean	182	1.67	4.63	3.22	.70337
PEBS (whole scale) Sum	182	34.00	89.00	62.79	11.81430
Conservation	182	2.00	5.00	3.89	.54892
Env. Citizenship	182	1.00	4.67	2.86	.92063
Food	182	1.00	5.00	3.16	1.66501
Transport	182	1.00	5.00	2.98	2.9783

Factor Analysis

When the items of the UVS were examined via *principle component analysis (PCA),* with varimax rotation and Kaiser normalisation applied, there were three clear factors that emerged that mirrored the sub-scale grouping of egoistic, altruistic and biospheric (with respective eigenvalues of 1.272, 2.153 and 4.314). Overlap occurred with item four *Influential, having an impact on people and events* which highlighted polarity with the egoistic statements and the altruistic statements. This adds to the evidence that this statement may have been interpreted as a positive impact or influence (for example having an impact on peoples health and wellbeing). Item eight also overlapped in the altruistic and biospheric components *A world at peace and free of war and conflict.*

Factor analysis via PCA for the NEP did not reveal a clear unidimensional structure and almost all items loaded heavily onto the first factor with an eigenvalue of 3.493 which is consistent with the findings of Amburgey and Thoman (2011) and further supports the decision to treat this as a uni-dimensional scale.

Factor analysis using PCA for the ACARPN scale did not yield any discernible pattern, therefore principle axis factoring with oblimin rotation was used which produced three clear factors. Factor one loaded to the personal norm items with an eigenvalue 9.122, factor two loaded to awareness of consequence items with an eigenvalue of 1.468, and factor three loaded to awareness of consequence items within an eigenvalue of 1.346.

Factor analysis via PCA with varimax rotation and Kaiser normalisation for the MTES revealed four factors. Factor one had an eigenvalue of 9.401 and factor two had an eigenvalue of 3.313 and both contained the first four sub-scales and thus all the positive motivation types. Factor

three contained all the externally regulated items (eigenvalue of 1.454) and factor four contained all the amotivation items (eigenvalue of 1.086).

Factor analysis using PCA with varimax rotation and Kaiser normalisation for the PEBS revealed four clear factors that grouped items identically to the sub-scales. The first factor was loaded heavily on the conservation items and had an eigenvalue of 4.060, the other three factors had lower eigenvalues of 1.645 (food items) and 1.583 (environmental citizenship items) and 1.381 (some items from Conservation, Environmental citizenship and transportation).

Correlation

Between scale correlation revealed a positive relationship between all scales, except for the externally regulated and amotivation subscales (Table 15) which had a negative and significant relationship to all other items. This is to be expected as these are sub-scales that are not linked to pro-environmentalism. Hypothesis one states that: *A biospheric value type will be associated with pro-environmental beliefs and personal norms*, therefore particular attention was paid to the biospheric value type and the relationship it had with the NEP, the sub-scales of the ACARPN and MTES. The biospheric value type had a small positive and significant relationship to the NEP, increasing to a medium and significant relationship to the AC, AR and Introjected sub-scales, and increasing further to a strong and significant relationship to the PN, Intrinsic, Integrated and Identified sub-scales. Even though the MTES and PEBS contained sub-scales that had unreliable Cronbach alpha scores (amotivation and transportation) they did demonstrate correlation of significance therefore they were included within the regression. For example, the amotivation and transportation were negative but significantly correlated to AC. The externally regulated sub-scale was not correlated to any other item but to maintain completeness of the scale it was included.

This may be a limitation of the MTES scale and will be explored further within the Discussion chapter.

Table 15

Pearson's Correlation

	Egoistic	Altruistic	Biospheric	NEP	Awareness of consequences	Ascription of Responsibility	Personal Norms	Intrinsic	Integrated	Identified	Introjected	Externally Regulated	Amotivation	Conservation	Env. Citizenship	Food	Transportation
Egoistic	-																
Altruistic	.158*	-															
Biospheric	.151*	.558**	-														
NEP	.183*	.191**	.261**	-													
Awareness of Consequences	.307**	.211**	.388**	.298**	-												
Ascription of Responsibility	.217**	.229**	.380**	.309**	.520**	-											
Personal Norms	.210**	.352**	.595**	.350**	.626**	.592**	-										
Intrinsic	.191**	.276**	.611**	.233**	.493**	.496**	.721**	-									
Integrated	.181*	.342**	.608**	.285**	.505**	.513**	.716**	.787**	-								
Identified	.201**	.203**	.550**	.184*	.513**	.437**	.613**	.755**	.746**	-							
Introjected	.126	.205**	.462**	.158*	.444**	.381**	.604**	.659**	.678**	.671**	-						
Externally Regulated	.108	-.024	-.074	-.049	-.106	-.142	-.103	-.025	-.114	-.101	-.034	-					
Amotivation	.039	-.164*	-.191**	-.122	-.320**	-.189*	-.205**	-.267**	-.299**	-.293**	-.223**	.012	-				
Conservation	.156*	.219**	.407**	.140	.352**	.424**	.496**	.445**	.470**	.458**	.338**	-.039	-.268**	-			
Env. Citizenship	.075	.193**	.366**	.290**	.254**	.270**	.391**	.363**	.420**	.303**	.316**	-.014	-.120	.360**	-		
Food	.200**	.343**	.331**	.181*	.273**	.276**	.339**	.312**	.372**	.311**	.289**	-.063	-.166*	.364**	.288**	-	
Transportation	.091	.113	.150*	.154*	.259**	.160*	.263**	.210**	.259**	.208**	.095	-.048	-.133	.133	.231**	.172*	-

*<.05 **<.001.

Regression

The following five regression analyses were necessary for Hypotheses two and three which state*: 2. Value type will predict the degree of engagement with pro-environmental behaviour: An egoistic value type will be linked to lower engagement; Altruistic and Biospheric value types will be linked to greater engagement. 3. Pro-environmental beliefs and personal norms will predict greater engagement with pro-environmental behaviour.*

Outcome variable – pro-environmental behaviour.

The regression used all predictors entered in hierarchical order. According to the ANOVA all four models were significant with the F value illustrating that each model was better at predicting pro-environmental behaviour than by chance alone. The adjusted R^2 increased at each step with the introduction of new variables and the change was significant up until model three. The results suggest that model 3 was better at predicting pro-environmental behaviour than the residual alone accounting for 35% variance in the outcome. Table 16 illustrates the first stage of regression.

The coefficients revealed the biospheric value type as an individual variable as the most significant in three of the four models. The individual variance explained by the biospheric value type in model three was 1.69% and the beta was .183. The model summary also revealed personal norms as having a unique and significance impact on variance on pro-environmental behaviours accounting for 3.17% variance in model three and with a beta of .281. In summary, the regression revealed that the best predictors of overall pro-environmental behaviour were the biospheric value type and personal norms.

Table 16

Hierarchical regression between predictor variables and outcome variable pro-environmental behavioural sum

*< .01 **<.05 ***<.001.

Model	b_i	b^*_i	t	Sig.	Part	Adjusted R2	R2 change	F
1								
Egoistic	.868	.098	1.488	.138	.096	.239	.252***	19.986***
Altruistic	1.181	.090	1.150	.252	.075			
Biospheric	4.981	.418	5.337***	.000	.346			
2								
Egoistic	.666	.076	1.148	.253	.073	.261	.025*	16.964***
Altruistic	1.074	.082	1.060	.291	.068			
Biospheric	4.565	.383	4.882***	.000	.312			
New Ecological Paradigm	5.135	.166	2.482*	.014	.159			
3								
Egoistic	.223	.025	.396	.693	.024	.345	.093***	14.606***
Altruistic	1.088	.083	1.139	.256	.069			
Biospheric	2.180	.183	2.165*	.032	.130			
New Ecological Paradigm	2.502	.078	1.195	.234	.072			
Awareness of Consequences	1.494	.064	.783	.435	.047			
Ascription of Responsibility	2.147	.103	1.335	.184	.080			
Personal Norms	5.717	.281	2.960***	.004	.178			
4								
Egoistic	.302	0.34	.530	.597	.031	.362	.037	8.890***
Altruistic	1.035	.079	1.065	.288	.063			
Biospheric	1.325	.111	1.209	.228	.072			
New Ecological Paradigm	2.367	.074	1.133	.259	.067			
Awareness of Consequences	.378	.016	.191	.849	.011			
Ascription of Responsibility	1.525	.073	.946	.345	.056			
Personal Norms	3.962	.195	1.800**	.074	.107			
Intrinsic	-.610	-.059	-.505	.614	-.030			
Integrated	2.224	.254	2.211*	.028	.131			
Identified	.842	.072	.680	.497	.040			
Introjected	-.312	-.036	-.406	.685	-.024			
Externally Regulated	-.062	-.003	-.042	.966	-.003			
Amotivation	-1.798	-.075	-1.146	.254	-.068			

The second stage of regression was to explore the results in more detail specifically looking at each of the four behaviours contained within the PEBS, the aim was to examine if certain predictors could be attributed to each of the outcome variable behaviours. Four separate hierarchical regressions were performed, each with the same predictors in the same order for each model (as seen in Table 9), but with the outcome variable altered each time to reflect the four

behaviour types within the PEBS: conservation, environmental citizenship, food and transportation.

Outcome variable – conservation behaviour.

The ANOVA revealed that all models were significant, and all made a positive contribution to the amount of variance in the outcome, with the adjusted R2 increasing with each model (Table 17). However, the change in F value was not significant in model 4 indicating that the motivation types did not add anything of value to the predictive ability of model three. The regression illustrated that model 3 was the most successful predictor of conservation behaviour, the F change was significant, and the model accounted for 27% variation in outcome.

More specifically the coefficients revealed patterns of individual predictors that made significant contribution to the predictive nature of the model. Firstly, the biospheric value type was significant in model three, accounting for 1.54% of unique variance with a beta of .175. Ascription of responsibility and personal norms made a small but significant unique contribution in model 3, accounting for 2.34% and 3.49% of unique variance respectively. Within model 3, personal norms had the highest part correlation of .187 and the highest beta of .294 indicating that this variable was the most important within the model.

Table 17

Regression between predictor variables and outcome variable conservation behaviour

*< .01 **<.05 ***<.001

Model	B	Beta	t	Sig.	Part	Adjusted R2	R2 Change	F
1								
Biospheric	.220	.398	4.832***	.000	.329	.159	.173***	12.422***
Egoistic	.043	.106	1.522	.130	.104			
Altruistic	-.015	-.024	-.294	.769	-.020			
2								
Biospheric	.217	.393	4.683***	.000	.320	.155	.000	9.296***
Egoistic	.042	.103	1.458	.147	.100			
Altruistic	-.015	-.025	-.307	.759	-.021			
New Ecological Paradigm	.035	.023	.326	.745	.022			
3								
Biospheric	.097	.175	1.954**	.052	.124	.268	.122***	10.448***
Egoistic	.021	.051	.760	.448	.048			
Altruistic	-.016	-.026	-.343	.732	-.022			
New Ecological Paradigm	-.114	-.077	-1.113	.267	-.071			
Awareness of Consequences	.011	.010	.119	.905	.008			
Ascription of Responsibility	.190	.197	2.408*	.017	.153			
Personal Norms	.278	.294	2.934***	.004	.187			
4								
Biospheric	.061	.110	1.128	.261	.071	.285	.040	6.549***
Egoistic	.023	.057	.836	.404	.053			
Altruistic	-.015	-.024	-.311	.756	-.020			
New Ecological Paradigm	-.114	-.077	-1.113	.267	-.070			
Awareness of Consequences	-.061	-.056	-.626	.532	-.039			
Ascription of Responsibility	.174	.180	2.196*	.029	.138			
Personal Norms	.248	.262	2.290*	.023	.144			
Intrinsic	.009	-.020	-.159	.874	-.010			
Integrated	.038	.093	.766	.445	.048			
Identified	.090	.166	1.485	.140	.093			
Introjected	-.037	-.092	-.989	.334	-.062			
Externally Regulated	.052	.046	.718	.474	.045			
Amotivation	-.145	-.130	-1.873	.063	-.118			

Outcome variable – environmental citizenship.

The ANOVA revealed an increase in adjusted R^2 for each model however the R^2 change was not significant in model four, therefore this could be excluded. The adjusted R^2 for model three was .208 indicating that this model accounted for 21% variation on the outcome. The F value was significant in all models but model three appeared to be the best overall predictor of environmental citizenship (Table 18).

More specifically the coefficients revealed patterns of individual predictors that made significant contribution to the predictive nature of the model. The biospheric value type was significant in predicting environmental citizenship with a part correlation of .153 indicating a unique contribution of 2.35% of variation respectively, the beta was .215 indicating importance. In addition, the NEP in model three had a part correlation of .152 accounting for 2.31% variance in the outcome, with a beta of .166. Finally, personal norms had a part correlation of .131 indicating a unique contribution of 1.7% of variation respectively, along with a beta of .207. This would suggest that model three was the best at predicting environmental citizenship.

Table 18

Regression between predictor variables and outcome variable environmental citizenship

*< .01 **<.05 ***<.001

Model	B	Beta	t	Sig.	Part	Adjusted R2	R2 Change	F
1								
Altruistic	-.013	-.013	-.148	.882	-.010	.123	.137***	9.452***
Biospheric	.351	.377	4.481***	.000	.312			
Egoistic	.002	.003	.047	.962	.003			
2								
Altruistic	.-.023	-.023	-.278	.781	-.019	.178	.041***	9.602***
Biospheric	.309	.332	3.973***	.000	.271			
Egoistic	-.018	-.026	-.368	.714	-.025			
New Ecological Paradigm	.529	.212	2.969***	.003	.202			
3								
Altruistic	.-.025	-.025	-.303	.762	-.020	.208	.030*	6.537***
Biospheric	.201	.215	2.275*	.024	.153			
Egoistic	-.031	-.045	-.631	.529	-.043			
New Ecological Paradigm	.413	.166	2.255*	.025	.152			
Awareness of Consequences	-.014	-.008	-.082	.934	-.006			
Ascription of Responsibility	.055	.034	.394	.694	.027			
Personal Norms	.329	.207	1.948*	.053	.131			
4								
Altruistic	-.034	-.033	-.393	.695	-.037	.233	.024	3.919***
Biospheric	.152	.164	1.564	.120	.106			
Egoistic	-.028	-.040	-.547	.585	-.037			
New Ecological Paradigm	.406	.162	2.185*	.030	.148			
Awareness of Consequences	-.024	-.013	-.134	.894	-.009			
Ascription of Responsibility	.024	.015	.166	.868	.011			
Personal Norms	.163	.102	.832	.407	.056			
Intrinsic	-.010	-.012	-.092	.927	-.006			
Integrated	.170	.249	1.900**	.059	.128			
Identified	-.065	-.071	-.595	.553	-.040			
Introjected	.035	.052	.518	.605	.035			
Externally Regulated	.050	.027	.383	.703	.026			
Amotivation	.003	.002	.022	.983	.001			

Outcome variable – food behaviours.

The ANOVA revealed that all models were significant, but the F value change was not significant in model two, three and four. This would indicate that model one (value type) was the most effective predictor of food behaviours, accounting for 15% variation in outcome (Table 19). More specifically the altruistic value type was the most significant individual predictor of food

behaviour, accounting for 3.49% of variance with a beta of .226. Although models two to four did not display significant change, the altruistic value type remained significant in all models.

Table 19

Regression between predictor variables and outcome variable food behaviour

*< .01 **<.05 ***<.001

Model	B	Beta	t	Sig.	Part	Adjusted R2	R2 Change	F
1								
Biospheric	.327	.195	2.364*	.019	.162	.153	.167***	11.868**
Egoistic	.135	.109	1.562	.120	.107			*
Altruistic	.415	.226	2.733***	.007	.187			
2								
Biospheric	.301	.180	2.143*	.033	.147	.153	.005	9.164***
Egoistic	.122	.099	1.404	.162	.096			
Altruistic	.409	.223	2.687***	.008	.184			
New Ecological Paradigm	.328	.073	1.020	.309	.070			
3								
Biospheric	.136	.081	.853	.395	.058	.166	.026	6.131***
Egoistic	.083	.067	.931	.353	.063			
Altruistic	.413	.225	2.730***	.007	.185			
New Ecological Paradigm	.115	.026	.348	.729	.024			
Awareness of Consequences	.194	.059	.641	.522	.044			
Ascription of Responsibility	.228	.078	.895	.372	.061			
Personal Norms	.301	.106	.985	.326	.067			
4								
Biospheric	.074	.044	.417	.677	.028	.162	.024	3.691***
Egoistic	.098	.079	1.065	.288	.072			
Altruistic	.418	.228	2.677***	.008	.182			
New Ecological Paradigm	.122	.027	.363	.717	.025			
Awareness of Consequences	.0.37	.011	.117	.907	.008			
Ascription of Responsibility	.168	.058	.647	.519	.044			
Personal Norms	.153	.053	.432	.667	.029			
Intrinsic	-.164	-.113	-.843	.400	-.057			
Integrated	.157	.128	.971	.333	.066			
Identified	.136	.083	.686	.494	.047			
Introjected	.067	.054	.538	.591	.037			
Externally Regulated	-.228	-.068	-.967	.335	-.066			
Amotivation	-.193	-.057	-.764	.446	-.052			

Outcome variable – transportation behaviours.

The ANOVA revealed that out of all the outcome variables this provided the lowest confidence and illustrated the smallest amount of variance across all models. Model three was the most significant (Table 20) accounting for 5% variation in the outcome. More specifically upon examination of coefficients, despite adequate beta scores for awareness of consequences (.157) and personal norms (.175) these individual predictors did not make a significant contribution to the predictive nature of the model.

Table 20

Regression between predictor variables and outcome variable transportation behaviour

*< .01 **<.05 ***<.001

Model	B	Beta	t	Sig.	Part	R2	Adjusted R2	F
1								
Biospheric	.118	.119	1.337	.183	.099	.028	.012	1.717
Egoistic	.049	.066	.879	.380	.065			
Altruistic	.038	.035	.392	.696	.029			
2								
Biospheric	.095	.095	1.055	.293	.078	.040	.018	1.843
Egoistic	.037	.051	.667	.506	.049			
Altruistic	.032	.029	.329	.742	.024			
New Ecological Paradigm	.304	.114	1.479	.141	.109			
3								
Biospheric	-.036	-.036	-.354	.724	-.026	.089	.052*	2.421*
Egoistic	.004	.006	.079	.937	.006			
Altruistic	.038	.035	.399	.690	.029			
New Ecological Paradigm	.159	.060	.757	.450	.055			
Awareness of Consequences	.306	.157	1.600	.111	.116			
Ascription of Responsibility	-.067	-.039	-.414	.680	-.030			
Personal Norms	.296	.175	1.531	.128	.111			
4								
Biospheric	-.078	-.079	-.705	.482	-.051	.122	.054	1.793*
Egoistic	.004	.005	.069	.945	.005			
Altruistic	.029	.027	.297	.767	.021			
New Ecological Paradigm	.122	.046	.577	.564	.042			
Awareness of Consequences	.278	.143	1.384	.168	.100			
Ascription of Responsibility	-.112	-.065	-.688	.492	-.050			
Personal Norms	.265	.156	1.188	.273	.086			
Intrinsic	.002	.003	.018	.986	.001			
Integrated	.156	.215	1.534	.127	.111			
Identified	.064	.066	.512	.609	.037			
Introjected	-.154	-.212	-1.977	.050	-.143			
Externally Regulated	-.013	-.007	-.088	.930	-.006			
Amotivation	-.076	-.038	-.475	.635	-.034			

Regression Summary.

The regression analyses illustrated several predictor variables that were significant and there were patterns within the data that kept surfacing with the five different analyses. The biospheric and altruistic value types were significant and reoccurring, they illustrated consistent predictive qualities for three out of the four of the behaviour types. The ascription of responsibility sub-scale and the New Ecological Paradigm were significant and held predictive qualities around

beliefs on environmental issues. The personal norms sub-scale was also significant and predictive of pro-environmental behaviours and represented the *norms* aspect of the VBN theory.

At this stage it was possible to see which of the variable (scales) did not add value or predictive potential, for example the MTES added very little in all the regression analyses. This meant that only significant variables were taken forward to the final stage of mediation analysis.

Mediation Analysis

The regression analysis demonstrated that not all variables in the causal chain held predictive significance. Out of the five regressions performed the transportation behaviour had little significance therefore it could not be used. Food behaviour was only predicted by value orientation therefore mediation cannot be applied with only one variable and one outcome. Therefore, the food and transportation behaviours could not be taken forward to the mediation analysis.

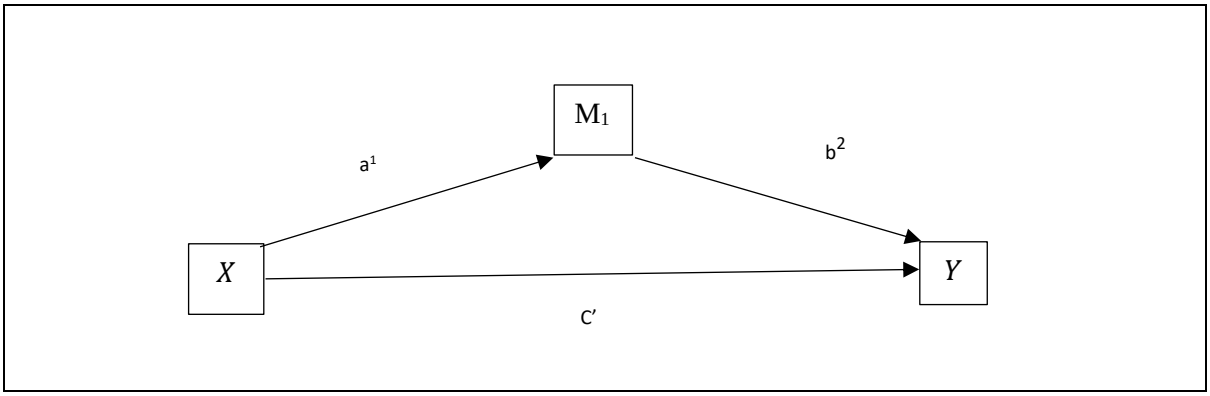
The regression did reveal that some variables in the causal chain were statistically significant. The first was the pro-environmental behaviour sum, the biospheric value type was a prominent feature along with personal norms and were taken forward for mediation (Figure 4). The second was conservation behaviour which did have two significant predictor variables of ascription of responsibility and personal norms (Figure 5). The third was environmental citizenship which had two significant predictor variables of NEP and personal norms (Figure 6) which was also taken forward to the mediation analysis. Mediation analysis was performed to examine Hypothesis Four: *Pro-environmental beliefs and norms will mediate the relationship between value type and pro-environmental behaviour*.

Mediation Analysis: Outcome Variable – pro-environmental behaviour sum

Hayes (2013) *PROCESS model 4* in SPSS was used to create a serial multiple mediator model. The first mediation was for the outcome variable pro-environmental behaviour sum and based on the results of the regression analyses the following items were entered into the mediation model (Figure 4): biospheric value type (*X*), personal norms (M_1) and pro-environmental behaviour sum (*Y*).

Figure 4

Mediation analysis with personal norms mediating biospheric value type and pro-environmental behaviour scale sum



The mediation model revealed a total effect of *X* on *Y* (including mediator) of .5.78, a direct effect of *X* on *Y* of 2.88 and an indirect effect of *X* on *Y* via the mediators of 2.9. The indirect effect

accounted for 34% variance in the outcome as opposed to 24% for the direct effect (Table 21). This would suggest that there is a greater effect via the indirect pathway with the mediators in action.

Table 21

Indirect effect of biospheric value type via mediator on pro-environmental behaviour; and direct effect of biospheric value type on pro-environmental behaviour

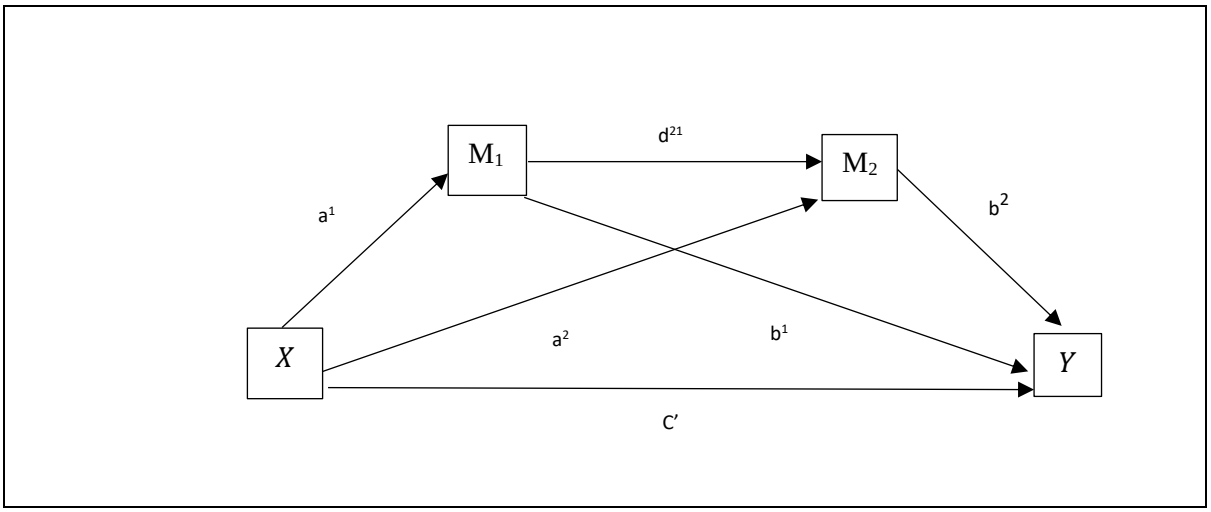
		Effect	**Adjusted R2**	**Variance**	**F**
Direct	Biospheric value type – pro-environmental behaviour	2.8818	.2355***	24%	55.4374
Indirect	Biospheric value type –personal norms –pro-environmental behaviour	2.9011	.3484***	34%	46.8112
	Total	5.7829			

Mediation Analysis: Outcome Variable – Conservation.

Hayes (2013) PROCESS model 6 in SPSS was used to create a serial multiple mediator model. The second mediation was for the outcome variable Conservation behaviour and based on the results of the regression analyses the following items were entered into the mediation model (Figure 5): biospheric value type (*X*), ascription of responsibility (M_1), personal norms (M_2) and conservation behaviour (*Y*).

Figure 5

Mediation analysis with ascription of responsibility and personal norms mediating biospheric value type and conservation behaviour



The mediation model revealed a total effect of *X* on *Y* (including mediators) of .2229, a direct effect of *X* on *Y* of .0876 and an indirect effect of *X* on *Y* via the mediators of .1353. The indirect effect accounted for 29% variance in the outcome as opposed to 16% for the direct effect (Table 22). This would suggest that there is a greater effect via the indirect pathway with the mediators in action.

Table 22

Indirect effect of biospheric value type via mediators on conservation behaviour; and direct effect of biospheric value type on conservation behaviour

		Effect	**Adjusted R2**	**Variance**	**F**
Indirect	Biospheric value type – ascription of responsibility – personal norms – conservation behaviour	.1353	.2885***	29%	24.0589
Direct	Biospheric value type – conservation behaviour	.0876	.1623***	16%	34.8640
	Total	.2229			

The serial multiple mediator model assesses all possible pathways within the model and can help to establish if there is one pathway within the model that is strongest or in contrast one that is weakest. Upon closer inspection of the indirect effects, there are three possible pathways (Table 23).

Table 23

Indirect effect pathways

Indirect effects of X on Y	**Effect**
Biospheric value type → ascription of responsibility → conservation behaviour	.0409
Biospheric value type → ascription of responsibility → personal norms → conservation behaviour	.0257
Biospheric value type → personal norms → conservation behaviour	.0687
Total	.1353

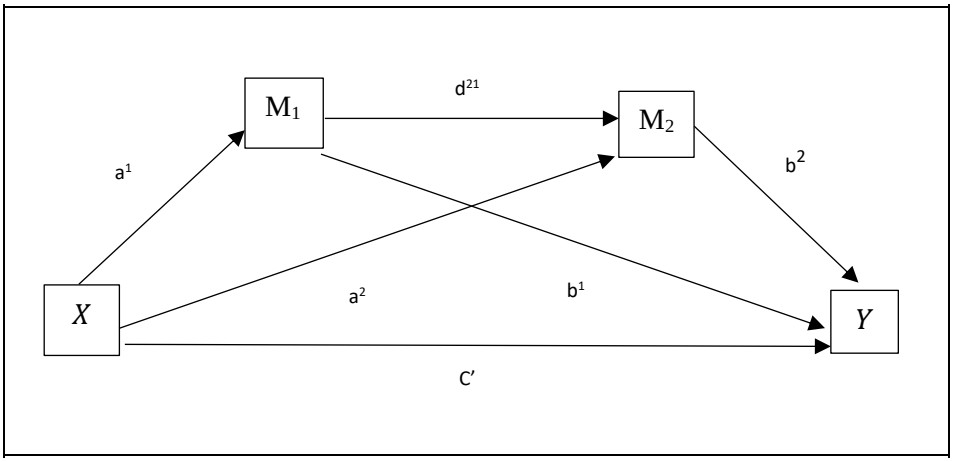
The strongest indirect pathway was personal norms mediating the relationship between biospheric value type and conservation behaviour which had an effect of .0687. This is consistent with model 3 of the regression which displayed that personal norms had the highest part correlation of .187 indicating the largest unique variance out of all the predictors.

Mediation Analysis: outcome variable – environmental citizenship.

The third mediation analysis performed was for the outcome variable environmental citizenship. Hayes (2013) PROCESS model 6 was used with one mediator (Figure 6) to explore the mediating effects that New Ecological Paradigm (M_1) and personal norms (M_2) have between biospheric value type (*X*) and environmental citizenship behaviours (*Y*).

Figure 6

Mediation analysis with NEP and personal norms mediating biospheric value type and environmental citizenship



The mediation revealed a total effect of *X* on *Y* of .3448, a direct effect of *X* on *Y* of .1864 and an indirect effect of *X* on *Y* via the mediators of .1584 (Table 24). The mediation model indicates that the direct effect from *X* to *Y* was marginally stronger than the indirect effect, and that the NEP and personal norms as mediators explained very little variance. Having a biospheric value type appears to be the most significant predictor of environmental citizenship.

Table 24

Indirect effect of biospheric value type via mediators on environmental citizenship behaviour; and direct effect of biospheric value type on environmental citizenship behaviour

		Effect	**Adjusted R2**	**Variance**	**F**
Indirect	Biospheric value type – new ecological paradigm – personal norms - environmental citizenship behaviour	.1584	.1772	18%	19.2779
Direct	Biospheric value type – environmental citizenship behaviour	.1864	.1373	14%	28.6439
	Total	.3448			

The serial multiple mediator model assesses all possible pathways within the model and can help to establish if there is one pathway within the model that is strongest or in contrast one that is weakest. Upon closer inspection of the indirect effects, there are three possible pathways (Table 25).

Table 25

Indirect effect pathways

Indirect effects of X on Y	**Effect**
Biospheric value type → new ecological paradigm → environmental citizenship	.0394
Biospheric value type → new ecological paradigm → personal norms → environmental citizenship	.0109
Biospheric value type → personal norms → environmental citizenship	.1081
Total	.1584

The strongest indirect pathway was personal norms mediating the relationship between biospheric value type and environmental citizenship, this had an effect of .1081. This is consistent with model three of the regression which revealed that personal norms had the highest beta of .207 indicating personal norms were a significant and important predictor of environmental citizenship.

Mediation Summary.

The first mediation analysis used pro-environmental behaviour as the outcome variable. The personal norms variable demonstrated the most significant predictive capability within this model. The second mediation used conservation behaviour as the outcome variable. The effect of the biospheric value type on conservation behaviour was mediated by ascription of responsibility and more significantly personal norms. This is consistent with the VBN theory, whereby ecological beliefs and norms mediate the relationship between values and behaviours. The third mediation used environmental citizenship as the outcome variable. The direct effect of the biospheric value type on environmental citizenship in this instance was the strongest pathway, however this was marginal and once again personal norms did feature as a significant predictor.

Discussion

Hypothesis 1: A biospheric value type will be associated with pro-environmental beliefs and personal norms

There was a positive and significant correlation between all three value types, beliefs and personal norms. However, the biospheric value type achieved the highest Pearson correlation coefficients indicating a small but significant relationship to the NEP, a medium and significant relationship to the AC, AR and introjected sub-scales and a strong and significant correlation to PN, Intrinsic, Integrated and Identified motivation types. This is consistent with the findings of Stern et al. (1999), Hunecke, Blöbaum, Matthies and Höger (2001) and Nordlund and Garvill (2003) who all found that the biospheric value type was associated with an increased concern for the environment (beliefs) and the subsequent intent / sense of obligation to act pro-environmentally (personal norms). Schultz (2001) adds to this by proffering that concern for the environment is largely dependent on the person's sense of connection with nature, with an increased sense of connection (and care for the biosphere) there will be an associated increase in environmental concern.

Hypothesis 2: Value type will predict the degree of engagement with pro-environmental behaviour: An egoistic value type will be linked to lower engagement; Altruistic and Biospheric value types will be linked to greater engagement.

This research has demonstrated that value orientation influences behaviour, specifically altruistic and biospheric value orientations have a positive correlation to pro-environmental

behaviour. The biospheric value type was a reoccurring theme in almost all the analyses performed and was positively correlated to pro-environmental behaviour as a whole and to three out of the four behavioural categories detailed within the PEBS (environmental citizenship, conservation and food). Stern et al. (1999) highlighted that values tend to be a stable and central element to personality, with ecological beliefs and norms playing a more situational or transient feature in decision making and behaviour. This illuminates the importance of values when performing research on pro-environmental behaviour.

The correlation between the biospheric value type and transportation behaviours (.150*) was weak. It indicated a relationship of some kind but not of enough significance within the regression to display any predictive capability. The nature of the work performed by the community NHS trust and the geographical location means that staff are often required to use a car for travel and do not get the opportunity to care share / carpool / to use public transport. This is consistent with the findings of Steg et al. (2005) who found that transportation, particularly car use, were often not used with pro-environmental intent. This is largely associated with the personal cost of pro-environmental actions and the perceived ease of adopting a behaviour. To avoid car use may carry a high perceived cost (in terms of time, effort or money) which may result in a reduced engagement. Schwartz (1977) presents the notion that people are in a continual process of weighing up the benefits and disadvantages of an action or behaviour. Failure to engage with a pro-environmental behaviour may lead to feelings of guilt which can be remedied in several ways to achieve cognitive consonance: denial of the need for action; denial of the individual responsibility to act; or, if the feeling of guilt become too great, then engagement with the pro-environmental action or behaviour may occur.

There were clear predictive patterns within the data linking values to pro-environmental behaviour. The strongest and most predominant was the biospheric value type, within the regression this value type accounted for unique and significant variance in almost all but one of the models. The biospheric value type held significant predictive power towards conservation behaviour, environmental citizenship and overall pro-environmental behaviour. The biospheric value type had no predictive ability towards transportation behaviours which again may indicate either a perceived lack of choice due to work requirements or a perceived cost associated with alternative means of travel (Steg et al., 2005).

The altruistic value type best predicted food choices accounting for 15% variation in the outcome. Kalof, Dietz, Stern and Guagnano (1999) found that altruism was linked to dietary choices such as vegetarianism, promoted by personal health benefits, improved welfare for animals and reduced carbon emissions associated with meat production. Kalof et al. (1999) do caution that the true intent of a behaviour may never be fully understood, for example a person may choose vegetarianism for the personal health benefits only which may infer egoistic values of self-interest. However, Janssen, Busch, Rodiger and Hamm (2016) counter this when exploring veganism and prefer the notion that adoption of behaviours is often driven by more than one motive, and in fact could represent both altruistic and egoistic motives simultaneously at any given time.

The egoistic value type had a small but significant positive correlation to food choices, indicating a relationship of some sort. This is consistent with the work of Alger and Weibull (2017, p. 1) who suggest that “few humans are motivated solely by their private gains. Most have more complex motivations, usually including some moral considerations… or an element of altruism”. This could indicate that although someone may have an egoistic value type there are other qualities or values that influence certain decision making. Lai et al. (2020) found that food choices were

often dictated by health, therefore a decision to move away from meat consumption may be led by self-enhancement rather than environmental interests. This may result in high scores within the food sub-scale as participants document their move away from meat but it may not be due to pro-environmental beliefs. Within all the regression analyses the egoistic value type lacked significance in all models. These results would suggest that while there often is a correlation, an egoistic value type does not predict pro-environmental behaviour. This is consistent with Steg et al. (2005) who found that concerns about self tend to be associated with lower environmental concerns, and lower environmental concern is associated with a lack of pro-environmental behaviours.

Hypothesis 3: Pro-environmental beliefs and personal norms will predict greater engagement with pro-environmental behaviour

The best example to illustrate this hypothesis was a hierarchical regression using environmental citizenship behaviour as the outcome variable, which accounted for 18% variation in environmental citizenship. This revealed that the new ecological paradigm and personal norms were both significant predictors of environmental citizenship. The new ecological paradigm scale represents the beliefs component of the VBN theory and is associated with an individual's ecological worldview (Stern, 2000). Personal norms represent the norms component of the VBN theory and are associated with the sense of obligation to take pro-environmental actions (Stern, 2000). In addition, pro-environmental behaviour accounted for 35% variation in regression and was well represented by the VBN theory with beliefs in the form of ascription of responsibility and personal norms predicting pro-environmental behaviour.

Not all the regression models supported this hypothesis and there were two examples where only beliefs or norms were significant. For example, conservation behaviour was only predicted by personal norms. This challenges the VBN theory which suggests that if one of the components is missing then the behaviour may not be enacted (Stern, 2000). These findings suggest that behaviours are still possible in the absence of all components from the VBN theory.

Hypothesis 4: Pro-environmental beliefs and norms will mediate the relationship between value type and pro-environmental behaviour

The mediation performed using conservation behaviour as the outcome variable best represented the VBN theory and illustrated that values and beliefs do act as mediators between value type and conservation behaviour. This model revealed that ascription of responsibility (beliefs) and personal norms mediated the relationship between biospheric value type and conservation behaviour, accounting for 29% variance via the indirect effect (compared to 16% via the direct effect). Steg et al. (2005) discussed the personal costs associated with pro-environmental behaviour and the impact this may have on the effectiveness of the VBN theory. They suggest that with low personal costs (time, effort or money) there is a greater engagement with pro-environmental behaviours and high personal costs are associated with low engagement. This is consistent with Zhang et al. (2020) and the findings of this mediation whereby conservation behaviours that produce a low personal cost (turning off lights, cooler wash, limiting time in shower) are well represented by the VBN theory.

As with the regression, the mediation highlighted that not all components of the VBN theory were significant and the mediation using pro-environmental behaviour as the outcome variable did not feature beliefs. The effect of personal norms within this example produced a 34%

variation in pro-environmental behaviour and illustrates that beliefs were not significant as a mediator.

The outcome variable food behaviour was not taken forward for mediation due to the results of the regression which revealed a non-significant change when beliefs and norms were added to the model. Only the altruistic value type was significant in predicting pro-environmental food choices.

VBN Theory

Overall, the VBN theory (Stern, 2000) appeared to work well in some situations, for example when applied to the conservation behaviour. This data showed that the values, beliefs and norms all played an important role in conservation behaviours. The VBN offers a simple model to explain certain behaviours and it is important to note that these conservation behaviours are all relatively low cost. However, when it comes to behaviours that carry an increased personal cost the VBN theory did not work as well. It appears that as the personal cost of pro-environmental behaviour increases so does the complexity of the factors influencing behaviours. Perhaps the VBN theory is best suited to decisions around simple everyday behaviours rather than infrequent or more complex decisions.

Although extensive research has been performed on the VBN theory (Steg et al., 2005; de Groot and Steg, 2008; Choi et al., 2015; Chen, 2015) there are few studies that have tested the full set of causal relationships (Turaga et al., 2010). This may be a result of the lack of validated scales that capture all elements of the VBN theory in a concise manner, that can be brought together in a way that is not off putting for participants to complete.

The VBN theory had its limitations within this study demonstrating predictive causal chain in only one of the mediation analyses performed. The VBN theory is limited in its capacity as it does not consider contextual factors or social norms (Lind et al., 2015; Fornara et al., 2020). Many authors are now using modified versions of the VBN theory successfully (Ghazali et al., 2019; Lai et al., 2020) and Reupert et al. (2016) recommend that authors consider the Value-Identity-Personal norms (VIP) model which pays greater attention to things like self-identity.

Measurement Instruments

The UVS (de Groot and Steg, 2008) was an excellent means of establishing value type and the creators were careful to keep this scale short and simple. It achieved good (egoist $\alpha = 0.711$, altruist $\alpha = 0.792$) and excellent (biospherist $\alpha = 0.857$) internal consistency scores, and factor analysis revealed three clear factors that mirrored the sub-scales. The resultant value types were a fundamental part of this research, contributing significant predictive power to all five regression analyses, and providing sound data for the mediation analysis.

The NEP (Dunlap et al., 2000) despite its age and extensive use proved to be the most problematic scale. This was largely due to confusion about the dimensionality of the scale and whether it should be uni or multi-dimensional. Even though Dunlap et al. (2000) recommend a uni-dimensional approach the use of five hypothesized facets would suggest that this tool is examining five slightly varying topics within ecological worldview. Dunlap et al. (2000) conclude their paper by stating that further research is needed to address the issues of dimensionality. Despite these issues the NEP was a significant predictor for environmental citizenship but when examined in mediation it was not found to be a significant mediator. The NEP was a significant

predictor of overall pro-environmental behaviour, but its power was diminished with the introduction of new variables. Arcury and Christianson (1990, p. 404) do caution that the NEP scores in previous studied tend to be high amongst those who have been directly affected by "critical environmental experiences" which may mean that its use amongst the general "unaffected" population may have less value.

The AC, AR and PN scale (Steg et al., 2005) fitted the requirements of this study precisely, addressing two components (beliefs and personal norms) of the VBN theory. It was used with apprehension because very few researchers have used it and tested its reliability since its creation. This was a risk but due to the applicability of the scale it was included. Interestingly, out of all the scales this proved to be the most reliable and least problematic. The Cronbach alphas were good (AC $\alpha = 0.79$, AR $\alpha = 0.79$) and excellent (PN $\alpha = 0.89$) in reliability tests, correlations to almost all other items were positive and significant, and factor analysis identified three clear factors. The scale provided significant predictive capacity in two of the five regressions and was also a prominent feature within two of the mediation analyses.

The MTES (Pelletier et al., 1998) was included to address personal norms mainly because the AC, AR and PN scale produced by Steg et al. (2005) had received little validation from other researchers since its creation. Due to the success and reliability of the AC, AR and PN scale the MTES was not actually needed, however it was included because the reliability of the AC, AR and PN scale was unknown at the beginning of the project. The MTES scale was included despite the external regulation sub-scale scoring a negative Cronbach Alpha score. Inclusion of this sub-scale may have affected the overall results of the scale and is a limitation of this research.

The PEBS (Markle, 2013) was the most appropriate behaviour scale available at the time of data collection. It is a shame that this scale does not reflect the four behaviour types outlined by

Stern (2000) when he created the VBN theory, but the PEBS is uncomplicated and not too long which is vital when using multiple scales within one questionnaire. For behaviours to reflect the VBN theory (Stern, 2000) it may be necessary to create and validate a new tool. A potential limitation of the PEBS was the low Cronbach alpha score of the transportation sub-scale and the inclusion of the sub-scale within this research.

Theoretical, Practical and Research Implications

This research has highlighted four key implications:

1. The theoretical contribution of this research is associated with the VBN theory and how this was successful in predicting small and inexpensive pro-environmental behaviours.
2. A further theoretical contribution was the VBN and its limited capacity to predict more complex pro-environmental behaviours. This has research implications as there is a need for a theory that can predict pro-environmental behaviour.
3. An individual's value type was found to be the most significant predictor of pro-environmental behaviours. From a practical perspective, organisations may wish to promote biospheric values within sustainable healthcare campaigns as this may compel people to act with collective sense of responsibility and duty.
4. Non-engagement and disengagement with sustainable healthcare continues to be a significant issue and further research is recommended to understand the values and beliefs of those who do not engage.

Limitations

An important limitation of this study was the use of a single questionnaire. The data represents attitudes which according to Sapsford (2007) are complex and often situational, changing over time and context dependent. This may mean that answers only provide a 'snapshot' in time and this could be address by longitudinal research in the future. Spector (1994) provides an interesting narrative on the risks of self-completion questionnaires and suggests methods to deal with self-reporting risks are to carry out longitudinal research but also to triangulate data from more than one source (via observations for example). Both methods were not feasible for the present study due to time and resource constraints, this is consistent with Markle (2013, p. 913) who noted that observational data are "theoretically ideal but operationally problematic".

There are risks associated with self-reported data. Firstly, there may be issues of the accuracy of self-reported behaviours and the reality that this may vary from actual behaviour (Kormos and Gifford, 2014). Secondly, there may be the pressure of subjective norms whereby the participant may want to please the researcher or feel that they are being judged by their answers and offer what they think to be socially desirable answers (Kormos and Gifford, 2014). All the instruments used within this study had structures in place to reduce bias and consistency of answers (Suárez-Alvarez et al., 2018). For example, instruments that used reverse scoring added negative (non-environmental) statements (for example the AC AR PN scale states *my contribution to the energy problem is negligible*) in amongst positive pro-environmental statements (for example *I feel personally obliged to save energy, regardless of what others do*).

This research is limited in terms of the focus on behaviours at home and the inconsistent data on behavioural spillover (Elf, Gatersleben and Christie, 2019; Truelove et al., 2014). The sustainable healthcare campaign used within this research focussed on behaviours at home in the

hope that this would cause behavioural spillover into the workplace. However, further research is needed to establish if spillover did occur with those who engaged in the campaign. As a result, behaviours at work would need to be examined and the use of a scale that measures behaviours at work and more specifically within a healthcare setting. To date, no such scale exists that focuses on sustainable healthcare.

The inclusion of the MTES scale and the two unreliable sub-scales that examined external regulation and amotivation, along with the PEBs transportation sub-scale may have affected the overall results. The options at the time were to remove the unreliable sub-scales, however this affected the completeness of the scale. The other option was to select one item from each of the sub-scales that had the best reliability and best represented the concept, however none of the individual items were reliable. The impact of removing the sub-scales has pros and cons and future researchers may choose to exclude these elements.

When exploring pro-environmental behaviours and psychology it is advisable to acknowledge the impact of contextual barriers and situational constraints. While this research did not seek to examine barriers at home or at work they are intrinsically linked to psychology and how individuals interpret their own environment. For example, the presence of contextual barriers may lead to poor uptake of pro-environmental behaviours, however on removal of these barriers there may be a significant improvement. This research sought to examine the psychological factors and therefore further research is needed to examine how contextual barriers affect psychological perspectives.

The sample utilised within this study may not be representative of the wider NHS population across the UK. It is recognised that this unique political affiliation in the region may not be representative of the wider NHS. It is also important to recognise the role of estates and

infrastructure staff and managers may have on some of the more significant contextual barriers and situational constraints. While this research did not set out to examine their perspectives it is pertinent to recognise that the VBN model when applied to these staff may have very different outcomes as they may feel more in control of the costly or complex behaviour changes.

Conclusion

This research has shed some light on how NHS organisations could enhance engagement with people who have certain value types (biospheric and altruistic). But one question remains unanswered and that is how to appeal to those who are disengaged. While this was not an objective of this research it remains an important topic. The egoistic value type has been found to predict low levels of pro-environmental behaviours and this group need to be understood in more detail. Key scholars have highlighted that values tend not to change, they transcend situations and time (Schwartz, 1992). Therefore, further research is needed to explore the impact that beliefs and norms, particularly in relation to self-enhancement, could have on pro-environmental behaviour.

Despite the limitations, the results of this study indicate that engagement with pro-environmental behaviours within the trust is largely dominated by value orientation, and while beliefs and personal norms do feature it is the value orientation in most instances that has the most significant effect. Further engagement in pro-environmental behaviour may be enhanced by emphasising biospheric values, promoting beliefs that everyone has a personal responsibility and that their contribution matters, and creating a sense of obligation to act. The results indicate that the VBN theory has most success when outcomes are simple and focussed on the collective gains of small behaviour change rather than attempting to influence more complex and costly behaviours. Further research is needed to examine behaviour change in relation to more complex and costly behaviours, possibly using the VIP model to capture the multi-faceted psychological strategies used when making decisions that involve additional cost or complexity, or the inclusion of estates and infrastructure staff who may have more control over contextual barriers. Added to

this is the need for research that assesses attitudes longitudinally over time and that triangulated data to build a clear and coherent picture.

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Appendix 8: Universal Values Scale

1	Egoistic Statements	Authority: the right to lead or command
2		Social power: control over others, dominance
3		Wealth: material possessions, money
4		Influential: having an impact on people and events
5	Altruistic Statements	Social justice: correcting injustice, care for the weak
6		Helpful: working for the welfare of others
7		Equality: equal opportunity for all
8		A world at peace: free of war and conflict
9	Biospheric Statements	Protecting the environment: preserving nature (R)
10		Preventing pollution (R)
11		Respecting the earth: live in harmony with other species (R)
12		Unity with nature: fitting into nature (R)

Appendix 9: New Ecological Paradigm Scale

1	We are approaching the limit of the number of people the earth can support (R)
2	Humans have the right to modify the natural environment to suit their needs
3	When humans interfere with nature it often produces disastrous consequences (R)
4	Human ingenuity will ensure that we do NOT make the earth unliveable
5	Humans are severely abusing the environment (R)
6	The earth has plenty of natural resources if we just learn how to develop them.
7	Plants and animals have as much right as humans to exist. (R)
8	The balance of nature is strong enough to cope with the impacts of modern industrial nations
9	Despite our special abilities, humans are still subject to the laws of nature. (R)
10	The so-called “ecological crisis” facing humankind has been greatly exaggerated.
11	The earth is like a spaceship with very limited room and resources. (R)
12	Humans were meant to rule over the rest of nature.
13	The balance of nature is very delicate and easily upset. (R)
14	Humans will eventually learn enough about how nature works to be able to control it
15	If things continue their present course, we will soon experience a major ecological catastrophe. (R)

Appendix 10: Awareness of Consequences, Ascription of Responsibility and Personal Norms Scale

1	Global warming is a problem for society
2	Energy savings help reduce global warming
3	The exhaustion of fossil fuels is a problem
4	The exhaustion of energy sources is a problem
5	Environmental quality will improve if we use less energy
6	It is not certain whether global warming is a real problem (R)
7	I am jointly responsible for the energy problems
8	I feel jointly responsible for the exhaustion of energy sources
9	I feel jointly responsible for global warming
10	My contribution to the energy problems is negligible (R)
11	Not only the government and industry are responsible for high energy consumption levels, but me too
12	In principle, individuals at their own cannot contribute to the reduction of energy problems (R)
13	I feel personally obliged to save as much energy as possible
14	I feel morally obliged to save energy, regardless of what others do
15	I feel guilty when I waste energy
16	I feel morally obliged to use green instead of regular electricity
17	People like me should do everything they can to reduce energy use
18	If I would buy a new washing machine, I would feel morally obliged to buy an energy efficient one
19	I do not feel guilty at all when I buy vegetables and fruit from distant countries (R)
20	I feel obliged to bear the environment and nature in mind in my daily behaviour
21	I would be a better person if I saved energy

Appendix 11: Motives Towards the Environment Scale

1	Pleasure in mastering new ways to help
2	Pleasure in improving the quality of the environment
3	Pleasure when doing things for the environment
4	Pleasure in contributing to the environment
5	An integral part of my life
6	Seems that taking care of myself and environment are inseparable
7	Has become a fundamental part of who I am
8	Part of the way I've chosen to live
9	Is a sensible thing to do
10	A way I have chosen to contribute
11	Is a reasonable thing to do
12	A good idea to do something about the environment
13	I'd regret not doing something
14	Would feel guilty if I didn't
15	Would feel bad if I didn't do anything
16	Would feel ashamed if I didn't
17	Other people will be upset if I don't (R)
18	For the recognition I get from others (R)
19	Because my friends insist that I do (R)
20	To avoid being criticized (R)
21	I wonder why; the situation isn't improving (R)
22	Don't know, have the impression I am wasting time (R)
23	Don't know, can't see how my efforts are helping (R)
24	Don't know, can't see what I'm getting out of it (R)

Appendix 12: Pro-Environmental Behaviour Scale

Conservation	How often do you turn off the lights when leaving a room? ±
	How often do you turn off stand-by modes on appliances and electrical devices? ±
	How often do you cut down on air-condition or heating to limit energy use? ±
	How often do you turn off the TV when leaving a room? ±
	How often do you limit your time in the shower in order to conserve water? ±
	How often do you wait to have a full load before using the washing machine or dish washer? ±
	At which temperature do you wash your clothes? ≠
Environmental Citizenship	Are you currently a member of any environmental, conservation, or wildlife protection groups?*
	During the past year have you contributed money to an environmental, conservation, or wildlife protection group? *
	During the past year have you increased the amount of organically grown fruits and vegetables you consume? *
	How frequently do you watch television, movies, or internet videos about environmental issues? ±
	How often do you talk to others about their environmental behaviour? ±
	Please answer the following question based on the vehicle you drive most often: approximately how many miles per gallon does the vehicle get?∞

Food	During the past year have you decreased the amount of beef you consume? ×
	During the past year have you decreased the amount of pork you consume? ×
	During the past year have you decreased the amount of poultry you consume? ×
	During the past year how often have you car-pooled? ^
Transportation	During the past year how often have you used public transportation? ^
	During the past year how often have you walked or cycled instead of driving? ^

± Likert Scale of never (1), rarely, (2), sometimes (3), usually (4) and always (5).

≠ Hot (1) / warm (3) / cold (5)

* Yes (5) / No (1)

∞ 24 or less (1), 25-29 (2), 30-34 (3), 35-39 (4), 40+ (5), Unsure (3).

× Yes (5) / No (1)/ I don’t eat this meat (5).

^ Likert scale never (1), occasionally (2) and frequently (3).

Appendix 13: Participant Information Sheet (Questionnaire)

An exploration of the values, beliefs and norms that have influenced engagement and non-engagement with a sustainable healthcare campaign.

Attitudes and behaviours about climate change and a sustainable healthcare campaign

My name is Chloe Griggs and I am completing doctoral studies at Canterbury Christ Church University (CCCU) under the supervision of Dr Ana Fernandez and Prof. Margie Callanan. I am also a registered nurse-lecturer and I have a keen interest in climate change and sustainability. As part of my PhD I am keen to gain information from people who work in healthcare about climate change and the sustainable healthcare campaign within your organisation. I would like to invite you to take part in a research study. Before you decide whether to take part, it is important that you understand why the research is being done and what it would involve for you.

Talk to others about the study if you wish.

(Part 1 tells you the purpose of this study and what will happen to you if you take part.

Part 2 gives you more detailed information about the conduct of the study).

What is the purpose of the study?

This research will explore the things that have influenced or motivated you to either engage or not engage with the sustainable healthcare campaign.

Why have I been invited?

You have been invited because you work for the Community NHS Trust which is where this research is taking place.

Do I have to take part?

It is up to you to decide whether to join the study. You are free to withdraw at any time, without giving a reason.

What will happen to me if I take part?

You will be asked to complete a questionnaire exploring the factors that have led you to either engaging or choosing not to engage in the sustainable healthcare campaign. Opinions from all staff are very important. The questionnaire takes around 15 minutes and can be completed at your leisure either online or in paper format. As part of the questionnaire I will ask some questions about you, for example, your job title and length of time in post. I will also give you the chance to leave your contact details so that you can receive the gift and be entered into our prize draw, you may also request information about the outcome of the study. This is optional and you do not have to leave your contact details

Expenses and payments

Other than 15 minutes of your time you will not incur any expenses, however if you do take part we are offering a free jute shopping bag to the first 150 participants to complete and return a questionnaire, plus the chance to be entered into a prize draw. The prize is a weekend for two people at Huntstile Organic Farm in Somerset.

What are the possible benefits of taking part?

We cannot promise the study will help you but the information we get from this study will help improve our understanding of the factors that influence or motivate staff to engage or not engage in sustainable healthcare campaigns.

What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. The detailed information on this is given in Part 2.

Will information from or about me from taking part in the study be kept confidential?

Canterbury Christ Church University is the sponsor for this study based in the United Kingdom. We will be using information from you to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Canterbury Christ Church University will keep research data about you for 10 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally identifiable information possible.

You can find out more about how we use your information by contacting Chloe Griggs on 01227 767700 ext. 2029 or you can send me an email via chloe.griggs@canterbury.ac.uk

Chloe Griggs will keep your name and contact details confidential and will not pass this information to Canterbury Christ Church University. Chloe Griggs will use this information as needed, to contact you about the research study, and to oversee the quality of the study. Chloe

Griggs will only share your contact details if you consent to be entered into the prize draw. You will be contacted before this happens if you are the winner. Certain individuals from Canterbury Christ Church University and regulatory organisations may look at your research records to check the accuracy of the research study. Canterbury Christ Church University will only receive information without any identifying information. The people who analyse the information will not be able to identify you and will not be able to find out your name or contact details.

This completes part 1.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2 of the information sheet

What will happen if I don't want to carry on with the study?

If you start the questionnaire but then decide you do not wish to carry on you can simply close the internet browser, this means the questionnaire will not be saved and will not be sent to the researcher. If completing a paper copy you can simply throw away the questionnaire.

What if there is a problem?

If there is a problem, you can decide if you wish to continue or not. If you want to make a complaint, please follow the instructions below.

Complaints

If you have a concern about any aspect of this study, you should ask to speak to me and I will do my best to address your concerns. You can contact me by leaving a message on the 24-hour

voicemail phone number 01227 767700 Ext 2029. Please leave a contact number and say that the message is for me Chloe Griggs and I will get back to you as soon as possible. If you remain unhappy and wish to complain formally, you can do this by contacting Professor Paul Camic, Research Director, Salomons Centre for Applied Psychology – paul.camic@canterbury.ac.uk, tel: 01227 927114.

What will happen to the results of the research study?

You will be asked if you wish to see a copy of the initial summary which should be available in draft format towards the end of 2019. The draft will contain a summary of key findings and the relationship to the existing body of literature on the subject. You will also be offered details of the final published version which is likely to be available in 2020 via an academic or clinical journal. The findings from this project will eventually form part of a PhD thesis and this will be presented to a board of examiners on site at CCCU.

Who is organising and funding the research?

Canterbury Christ Church University.

Who has reviewed the study?

This study has been reviewed and given favourable opinion by the Health Research Authority and The Salomons Ethics Panel, Salomons Centre for Applied Psychology, Canterbury Christ Church University.

Further information and contact details

Where to go for general information about research:

You can visit the Health Research Authority website for information on how they protect and promote the public in health and social care research, they also have some useful information about taking part and getting involved in research. You can access their website via the following link: https://www.hra.nhs.uk/

Who to contact for specific information about this research project:

If you would like to speak to me and find out more about the study of have questions about it answered, you can leave a message for me on a 24-hour voicemail phone line at 01227 767700 ext. 2029. Please say that the message is for me (Chloe Griggs) and leave a contact number so that I can get back to you. Or you can send me an email via chloe.griggs@canterbury.ac.uk

Who to contact for advice as to whether you should participate:

You can talk to Ana Fernandez who is the research supervisor for this project. Ana can provide advice as to whether you should participate and you can leave her a message on a 24-hour voicemail phone line at 01227 923914. Please say that the message is for Ana and leave a contact number so that she can get back to you. Or you can send Ana an email via ana.fernandez@canterbury.ac.uk

Who to contact if you are unhappy with the study:

You can talk to Professor Paul Camic who is the Research Director at Salomons Centre for Applied Psychology. You can leave Paul a message on a 24-hour voicemail phone line at 01227 927114. Please say that the message is for me (Paul Camic) and leave a contact number so that he can get back to you.

Chapter 5

Report on Professional Practice:

Case study: exploring non-engagement with a sustainable healthcare campaign in a community NHS Trust

Abstract

Introduction

This case study research sought to provide insight into the reasons why staff within a community NHS Trust did not engage with their sustainable healthcare campaign. The aims were to: give voice to those who have not engaged; establish if non-engagement was due to moral disengagement or a simple case of choosing not to engage; and to shed light on the factors that may deter people from taking part.

Method

Case study research was utilised to provide a rich insight into two cases. Participants were selected based the fact that they had not previously engaged with the campaign. A semi-structured interview was used to collect data from each participant and was divided into two parts. The first part explored the participants own beliefs and values around climate change. The second part reviewed a selection of the campaign webpages and gathered participants' thoughts about the campaign.

Results

The participants presented different reasons for non-engagement. One reason was associated with proximal priorities and the need to focus on other more pressing life issues. The other reason was because the participant was already demonstrating an existing and enduring commitment to climate change mitigation and sustainability. Despite the non-engagement both participants demonstrated a care for environment, and it was clear that moral disengagement from

the topic was not a factor. Issues that deterred participants from taking part were the outdated nature of some of the activities recommended within the campaign, where behaviour was already seen as normalised (such as recycling and reusable shopping bags).

Conclusion

Despite the success of the campaign, there remains a large percentage of staff who have not engaged. This non-engagement does not always indicate disengagement and it is important for healthcare organisations to understand the reasons for non-engagement. Pro-environmental activities need to be contemporary and forward thinking for those motivated to engage. For those who are less motivated to engage they may need a more structured means of engagement, with contemporary pro-environmental behaviours promoted and some level of personal accountability and governance.

Introduction

Using case study research this portfolio element sought to give voice to people who had not engaged with an in-house sustainable healthcare campaign. The research took place within a community NHS Trust in early 2020 and utilised interview methodology to collect data. The aim of the research was to explore if participants were disengaged with the topic of climate change and sustainable healthcare or if they had simply chosen not to engage with the campaign.

This research presents a single case study with a view to representing a 'typical case' or an ordinary situation (Yin, 2009). Within the community NHS Trust only a quarter of staff had engaged with the in-house sustainable healthcare campaign, this meant that three quarters had chosen not to engage. The purpose of this case study was to give voice to those who had chosen not to engage with the sustainable healthcare campaign. It is important to make the distinction between those who were morally disengaged and those who were morally engaged but not actively taking part in sustainable healthcare campaigns. Therefore, the aim of this research was to take a typical case and find out why they have chosen not to engage. In addition, they were asked to provide a commentary on the campaign website and the values, beliefs and norms that are activated when they view the campaign material.

Background

Since the start of this research in 2016 the global attention towards climate change has increased year on year (Ipsos, 2020) and is largely associated with the now undisputed evidence (Van Lange, Joireman and Milinski, 2018) that the planet is warming, and this has been accelerated by global industry and human behaviour (Met Office, 2020a). The frequency and severity of extreme weather events are presenting countries with the stark consequences of a warming planet, with examples such as the 2019-20 Australian bushfires (Yu, Xu, Abramson, Li and Guo, 2020) capturing a global audience and wreaking devastation to people, animals and the eco-system. In the UK a series of extreme winter storms led to the flood defences installed along the River Severn being breached (Morris and Bannock, 2020). The average temperature in the UK in February 2020 was 1.4 degrees Celsius above the long-term average (Met Office, 2020b) and 180mm of rain fell in Cumbria in a 24-hour period.

In 2019 the UK Prime Minister at the time, Theresa May, took the bold and pioneering pledge to commit the UK to becoming the first of the G7 industrialised nations to be carbon neutral by 2050 (Walker, Mason and Carrington, 2019). However, a report by Energy Systems Catapult (2020, p. 4-5) cautioned that achievement of carbon-neutral status by 2050 required "unprecedented innovation across economies" and "serious societal engagement". Concern about climate change amongst the general population is also growing with 23% of a sample taken by Cardiff University ranking climate change as the most pressing issue that we face in the next 20 years (Steentjes, Demski, Seabrook, Corner and Pidgeon, 2020). They also found a shift in the level of worry with more people reporting they were *fairly* or *very worried* about climate change compared to study data collected in 2010, 2013 and 2016 (Steentjes et al., 2020).

This shift in public perception represents an opportunity to engage with the public and spark some important behavioural and lifestyle changes (Bouman et al., 2020). However, sustainable healthcare campaigns that seek to engage people and change behaviours, have witnessed a relatively low level of engagement with approximately 25% of all staff within the community NHS Trust opting to engage (figures correct in 2019 at the commencement of this case study). This raises important questions about such campaigns and whether the 75% non-engagement was indicative of people feeling disengaged from the topic (Poortinga et al., 2019), or if the campaign and its messages were off-putting in some way to elicit some moral disengagement (Rayner and Minns, 2015), or if people were already engaged in the topic and did not feel the need to engage.

The campaign was a staff engagement programme, designed to encourage and empower staff to make small adjustments to their life (predominantly at home but some aspects linked to work) that result in a reduction in their personal carbon footprint. The campaign encouraged staff to complete an activity and pledge to do something differently, for example, walking to work, or go meat free one day a week, and each activity carried an educational message. The campaign aim was to develop a workforce that had a strong environmental self-identity with the hope that there would be behavioural spillover between home and work (Van der Werff, Steg and Keizer, 2014).

Engagement, disengagement and non-engagement

According to Macey and Schneider (2008) active engagement and active disengagement within the workplace have historically been sitting at opposite ends of a spectrum. However, this

spectrum does not consider non-engagement and the reasons for non-engagement. This section seeks to explore and define what is meant by engagement, disengagement and non-engagement.

According to Peeters, Diependaele and Sterckx (2019) moral *engagement* requires a personal motivation to act in a way that is consistent with personal moral standards. Despite social pressures and the temptation to adopt self-exonerative strategies the individual exercises personal responsibility and courage to act in line with moral standards. Engagement within the workplace has both attitudinal and behavioural components and Macey and Schneider (2008) describe the fact that one may exist without the other. For example, it is possible that someone may have attitudinal engagement towards sustainable healthcare but not be behaviourally engaging with the campaign (Macey and Schneider, 2008).

There are many variables that affect engagement with sustainable healthcare already explored within this research. However, Hejjas, Miller and Scarles (2019) discuss the significance and impact of organisational culture on engagement within the workplace. In instances where there was a strong organisational culture, they found that employees had a desire and personal responsibility to align with the organisation's identity. In contrast, where strong sub-cultures existed there was a marked deviation from the organisation's identity, as the sub-culture was more visible to employees on a day-to-day basis (Lamm, Tosti-Kharas and King, 2015). In large NHS organisations sub-cultures are inevitable due to the sheer size and scale of operations, therefore engagement of staff in campaigns should consider the culture that exists in individual teams and services as this will vastly affect the employees understanding and willingness to enact key behaviours (Hejjas et al., 2019).

In stark contrast, moral *disengagement* is the process whereby individuals can selectively disengage certain moral standards to accommodate their circumstances. Moral standards and

'rules' are adjusted, and sanctions are applied to avoid feelings of guilt (Peeters et al., 2019). One key mechanism of moral disengagement is the displacement of responsibility, whereby individuals attribute blame onto others for their own actions and behaviours. They see themselves as innocent victims under the instruction of others, rather than assigning personal responsibility for their actions. In large organisations like the NHS, the notion of diffused responsibility is described by Bandura (1996, p. 365) as "when everyone is responsible, no one really feels responsible".

The notion of *non-engagement* is ambiguous within the literature as most authors tend to focus on the engagement-disengagement spectrum. It is unclear where non-engagement fits within this and the reasons for non-engagement could be varied and valid. Non-engagement with a sustainable healthcare campaign may be a conscious decision or a passive state born out of a socially accepted inaction (Bouman and Steg, 2019). This research did not make any pre-suppositions about the 75% of staff who have not engaged with the campaign and sought to explore and illustrate some of the possible reasons why people have not engaged.

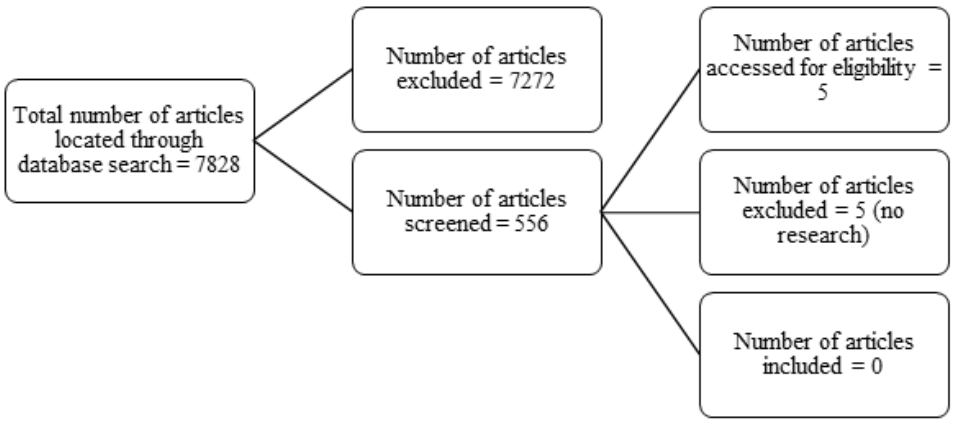
Literature Search

As the focus of this final piece of research was on engagement and non-engagement with sustainable healthcare campaigns an updated literature search was completed. Three databases were selected: the British Nursing Index, Ovid Medline and Applied Social Science Indexes and Abstracts. The key words 'sustainable healthcare' were used in all three databases and the following refinement was applied: date parameters set to 2016-2020; peer reviewed articles only; no editorials, commentaries, news or general information. The literature search is illustrated in a *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) flowchart in

Figure 7 as recommended by Moher, Liberati, Tetzlaff and Altman (2009). Many articles that were excluded used words like sustain and sustainable when discussing service longevity. In addition, articles on sustainable healthcare within both medical education (Walpole and Mortimer, 2017) and nursing education (Richardson et al., 2016) were excluded as they focus on trainees while in University education. It seems that there is no UK research that examines the topic of staff engagement with sustainable healthcare. Many papers recommend staff engagement (Lugsdin and Hook, 2016; Shin and Manuel, 2016; Pencheon and Wight, 2020) but none of these papers examine engagement via empirical research.

Figure 7

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart – literature review on sustainable healthcare



Aims

1. To give a voice to those who have chosen not to engage with the campaign, exploring their personal and professional values, beliefs, norms and behaviours around climate change and sustainable healthcare.
2. To establish if non-engagement is due to people being morally disengaged or making a conscious choice to simply not engage.
3. To shed light on the factors that deter people from engaging with the campaign through a review of the online material.

Method

Design

This research was explanatory in nature and used a case study approach. From the outset the research adopted an *instrumental design* whereby the "enhanced understanding of the particular issue being examined is of secondary importance to the greater insight of the theoretical explanation that underpins the issue" (Hancock and Algozzine, 2006, p. 32). In other words, the engagement with the campaign is of secondary importance to the wider issue of why people choose to engage with sustainable healthcare campaigns. By gathering data from 2-3 participants the case study sought to present a *typical case* which according to Yin (2009) is representative of a commonplace or everyday situation.

Inclusion Criteria

Participants were approached purposefully based on meeting the following four criteria:

1. They had to be a member of staff within the community NHS Trust.
2. They had participated in the previous stage of the research and given consent to be contacted again.
3. They had not previously engaged with the campaign.
4. They were willing to take part in a one-to-one interview.

Participant Characteristics

Two participants consented to take part. Participant 1 was a female working in a clinical role, she was between 41-50 years of age and had worked for the Trust for more than 20 years. Participant 1 had scored 62 out of 90 in the Pro-environmental Behaviour scale within the previous phase of research, indicating a positive engagement with pro-environmental behaviours. Participant 2 was male working in a non-clinical role, was over 61 years of age, who had worked for the Trust for less than five years. Participant 2 had scored 73 out of 90 in the Pro-environmental Behaviour scale within the previous phase of research, indicating a positive engagement with pro-environmental behaviours. As an incentive to take part, both participants were offered a £50 *Cool Camping* voucher redeemable at any of the cool camping venues across the UK. Participant 1 declined this voucher as she had no use for it and instead the money was donated to the Woodlands Trust, participant 2 accepted the voucher. Within the results and discussion italicised evidential quotes from both participants will be used and they will be identified as P1 and P2.

Procedure

Participant contact details were already held by the researcher following the previous phase of the research documented in Chapter Four. During the previous phase participants had the option to leave their contact details and agree to being contacted in the future. Of the 182 participants who took part in the previous stage, 15 met the inclusion criteria. All 15 eligible participants were contacted via email and invited to participate. Two eligible participants responded and they were invited to take part in a 60-minute face-to-face interview.

Participants were offered information about the research via a Participant Information Sheet (Appendix 14). The consent form (Appendix 15) was completed prior to the interview and the participant was offered the opportunity to ask further questions before signing up. The interview schedule (see Appendix 16) adopted a semi-structured approach and consisted of two parts. The first part explored some general beliefs about climate change and sustainable healthcare, lifestyle choices and ways of working. The aim of this part was to establish if the participant was morally disengaged or morally engaged but choosing not to participate in the campaign and to identify personal reasons why they had not participated. The second part of the interview asked participants to view a selection of the campaign webpages and share their opinions on the campaign ranging from language used to the colour or imagery. The aim of this part was twofold, the first was to explore any values, beliefs and norms that are activated during the viewing of the webpages, and the second was to uncover any aspects of the campaign that may be deterring people from taking part.

Data gathered from the participants 18 months earlier were also used. These data were collected as part of the applied research project (the third phase) and consisted of five previously validated scales on values, beliefs, norms and behaviours. Each scale provided an indication of the participant attitudes and behaviours towards climate change. This was considered to provide a good means of data source triangulation in the current phase. Data triangulation according to Stake (1995) allows an assessment of what was being observed and reported to be cross-checked against a previous circumstance, this allows the researcher to see if meaning and value can be reliably applied to the same topic.

Ethical Approval

Ethical approval was gained from Canterbury Christ Church University ethics committee and an ethical compliance letter was issued in November 2019 (reference: V:\075\Ethics\2019-20). The research was in accordance with the British Psychological Society's (2014) Code of Human Research Ethics. The Health Research Authority (IRAS project ID: 276775) reviewed and approved the project in January 2020.

Participants were approached by email once and were able to take part freely and of their own will. Personal information such as name and email address were stored in a password protected secure computer file. Interviews were audio recorded via a digital device and the digital file was saved in a password protected area and deleted from the digital device. Data will be stored for 10 years in accordance with the Health Research Authority (2020) guidelines and all interview responses were fully anonymised for this final write up. Participants were given the option to receive a summary report within one year, both of which accepted.

Data Analysis

Prior to data collection the plan was to conduct a cross-case synthesis which according to Yin (2009) aggregates findings over a series of individual cases. This analysis was supposed to explore if the cases shared some similarity and distinguish if they were the same 'type' or if they shared some similarities as part of a sub-group. This should have been a process whereby the essential elements of individual cases were deconstructed and then rebuilt into an ordered whole, during this process the origin of the unit of meaning becomes less important than its membership

to a group of like units (Khan, 2008). However, the process of data analysis had to be revised as it became apparent during the second interview that the two cases were significantly different. It was clear that the cross-case synthesis would not have been appropriate as the process of deconstruction and reconstruction into one whole would not illustrate the differences. As a result, the cases were subject to individual thematic analysis and were kept separate. The following section will present both cases individually to illustrate the rich and diverse data collected.

The audio files from both interviews were transcribed by the researcher, allowing the researcher to become fully immersed in the data and constituted the first important stage of data analysis (Braun and Clarke, 2006). Braun and Clarke's (2006) six stages of thematic analysis were once again applied in the same way described in Chapter Two of this portfolio. During the process of thematic analysis, as codes and themes were applied to the text, patterns began to emerge from both transcripts. The patterns were common yet opposing with each case. For example, one participant demonstrated a high level of political awareness, yet the other participant had little political awareness, from this the theme *politics* was used, and presented one overarching theme with two opposing perspectives.

Quality Assurance

The raw transcripts were sent to the respective participants for member checking, a process whereby participants (or members) review the transcript for accuracy (Stake, 1995). The participants approved the raw transcripts and did not make any amendments or suggestions at that stage.

Investigator triangulation according to Stake (1995) is an important process to ensure reliability and validity of case study results. Following the initial stages of thematic analysis, a copy of the transcripts and codes were sent to both research supervisors for a form of inter-rater reliability checking. The dialogue between researcher and supervisors was reflexive and critical, and it represented an opportunity to not only challenge but give credit to first impressions, to acknowledge single instances as well as reoccurrences and to draw out some overarching similarities and differences.

Another useful means of assuring quality was to perform bracketing exercises whereby the researcher employs a reflective process to identify feelings and judgements about the research being undertaken. The researcher suspends those feelings to undertake analysis that is free from assumptions and pre-suppositions (Tufford, 2012). Bracketing was achieved by two means: the use of a reflective diary and critical discussions in supervisory meetings.

The use of a reflective diary allowed me to establish my epistemological position (which remained that of pragmatism – see chapter One) and the theoretical frameworks that were guiding the research. Gearing (2004) suggests that bracketing should start with this process of abstract formulation. The reflective diary also allowed me to capture my initial feelings after the interviews and during the initial transcription. During this stage it was important to avoid any judgements about reasons for non-engagement and to remain open to the participants lived experience. The second means of bracketing was through supervisory meetings, whereby supervisors were able to ensure that bracketing had a temporal structure long enough to ensure that the analysis and discussion were not influenced by my own values, beliefs and norms (Gearing, 2004).

Findings

A total of five themes were recorded: Knowledge, Politics, Ownership, Motivation and Social influence described in Table 26. This results section will explore each theme combining italicised evidential quotes from both participants along with a discussion of the theory.

Table 26

Emergent themes following data analysis

	Theme	**Description**
1	Knowledge	The depth and origins of knowledge varied between participants with one participant demonstrating a tacit knowledge base and the other an explicit knowledge base.
2	Political Awareness	One participant focused on local political issues while the other paid attention to more global issues.
3	Ownership	The participants ascribed different levels of personal responsibility to action of climate change and sustainable healthcare. This was evident from language used to describe their actions.
4	Motivation	Participants revealed different motivations to act or engage with pro-environmental behaviours. The participants differed with one demonstrating motivation stemming from external sources and the other describing motivation originating from within.
5	Social influence	One participant demonstrated a social influence over their beliefs while the other participant commented on the power of social influence over others.

Theme 1 - Knowledge

Participants were asked general questions about climate change such as their personal views, when they became aware and how would they describe climate change. Therefore, the first theme was focused on their knowledge and the different types of knowledge they had. The knowledge around climate change for participant 1 seemed to originate from personal lived experience and the changes witnessed in their local area. "*All of the flooding that we've had recently, we live in a house that backs onto Downs, a year ago the water just ran down beside our house, this year it has come into our garden and floods our garage, and that's probably down to climate change*" (P1). This knowledge may be more tacit in origins, rooted in local context and experience (Polanyi, 1966). The knowledge may be concrete in nature (Anderson, Krathwohl and Airason, 2000) because it represented personally acquired knowledge (Webb, 2005). "*Well, the planet is getting warmer, we had winters when I was a child, we always used to wear gloves, I haven't even brought my gloves out of the house this winter, this just goes to prove that there is something not quite right*" (P1). Van Lange, Joireman and Milinski (2018) document that knowledge around the existence of climate change is strengthened when people have witnessed the tangible effects such as extreme weather events. However, Borick and Rabe (2017) found that the impact of climate change is likely to be informed by an existing belief in climate change. For example, the association between extreme weather events and climate change reflect a pre-existing belief about climate change via a process of *biased assimilation* (Capstick and Pidgeon, 2014).

The knowledge exhibited by participant 2 seemed to be based more on information obtained from reading media sources rather than personal experience. "*You say the temperature of the earth goes up by half a degree, it doesn't sound very much, but I did see a statistic a while ago that for every degree of warming the sea level rises enough to incapacitate something like a million*

people. Because as the ice melts and the sea rises so it floods" (P2). This explicit knowledge is more likened to the type that is found in documents or databases (Polanyi, 1966), this knowledge is more abstract (Anderson, Krathwohl and Airason, 2000) and may require strategic and analytical thinking (Guy, Kashima, Walker and O'Neill, 2014) to comprehend the complexity of these hypothesised events. "*It's only sort of, more recently that people have pointed out and you realise the effect that global warming has on the earth, on the water cycle, you start to see the strange weather phenomenon. Bush fires in Australia and then ridiculous floods one after another*" (P2).

Swim et al. (2011) discuss the acquisition of knowledge on climate change and imply that those who have experienced the effects of climate change first-hand are more likely to believe the future risks are high and that immediate action is needed. They go on to suggest that people who do not see the effects locally of climate change have to rely on scientists and media, and these sources require the person to conceptualise and process the information through cognitive effort. Those who do not have the inclination or ability to conceptualise will probably perceive the risk of climate change as low (Peeters et al., 2019).

Theme 2 - Politics

Throughout the course of the interview both participants discussed political issues related to climate change and pro-environmental behaviour. As with the first theme, participant 1 drew upon political issues from a local perspective, with participant 2 taking a more global approach based on reading of media reports. Baddeley and James (1987) liken political awareness to emotional intelligence and state that someone's political awareness is their ability to read between

the lines when it comes to hidden messages or agendas within organisations and the power relationships this creates.

Participant 1 described the introduction of a bus lane within the local town as an environmental initiative. The bus lane was introduced to reduce traffic and ground level pollution in the town centre by encouraging people to park out of town. "*So in the morning there are all of the cars stacked up trying to get into xxxxxxx, and they've only got one lane, all of those fumes ...because actually not all of the things they [the local authority] do are environmentally friendly, like the bus lane... a single lane for a private company, and all of the commuters are stacked up*" (P1). The interpretation of this initiative may represent the *system justification theory* (Jost, Ledgerwood and Hardin, 2008) whereby people tend to justify and rationalise the status quo, and the pre-bus lane system as desirable. Parking out of town and using a bus represents a shift or threat to the status quo and this can initiate a defensive ideological stance (Gifford, 2011), when in fact the local authority may be simply trying to improve the health of those who live in the town centre. The Royal College of Physicians (2016) estimated that around 40,000 deaths each year were attributed to ground level ozone caused by exhaust emissions, yet preventative action taken by local authorities in this case study was being called into question. Gifford (2011) highlights trust as an essential element between citizens and their local authority or government. The citizen needs to believe that the motives of the local authority are pro-social and honest, and if this trust is broken in some way then disengagement will occur.

Participant 2 talked about global politics ranging from: The United States, "*You've got Trump getting elected on the back of a pledge to re-open the coal mines and steel works...He still wants to give the coal miners their jobs back. Trump obviously got in on that mandate and ...he talks to the unemployed steel workers and they vote for him*" (P2); through to Australia, "*The PM*

of Australia making statements about the money they make from fossil fuels" (P2). Participant 2 continued to discuss the oil industry "*There used to be this conspiracy theory that they [petroleum companies] could make lean burn petrol engines a lot more efficient than the real ones but the oil companies wouldn't fund the research because it meant that their profits would go down*" (P2).

Baddeley and James (1987) propose a model of political awareness whereby individuals firstly 'read' and secondly 'carry' information about the political world around them. An individual's ability to 'read' is about appraising and understanding the world around them and see both hidden and stated messages and agendas, and this determines their level of political awareness. An individual's ability to 'carry' information is associated with what they plan to do with that political awareness. Some people will use the information to play psychological games while others will act with integrity. Oreskes (2019) note that the presence of psychological games, particularly in the form of emotional manipulation, has undermined the climate change debate introducing layers of controversy that cast doubt over the seriousness of the subject. An individual will become attuned to the political message that appeals to them and they create an affiliation to the conspiracy theorists or the climate deniers (Guy et al., 2014). It was evident that both participants had read political messages in a very different way, this may also be linked to the sources of their knowledge and the ability to appraise information.

Theme 3 - Ownership

Participants were asked questions around their personal responsibility to reduce the effects of climate change and the consequences of their actions. Because of this the theme of 'ownership' emerged and the two participants demonstrated very different levels of personal ownership

towards climate change and the ascription of responsibility (Schwartz, 1977). This level of ownership was most noticeable in the language used, with participant 1 using language to describe a collective sense of responsibility. When discussing the campaign advice about keeping healthy and going for a walk, participant 1 stated "*That is something they do here, some of the girls have a walk at lunch time*" (P1) and when asked about climate change they stated "*Everybody has a responsibility*" (P1). In opposition, participant 2 used language that indicated a high level of personal ascription of responsibility: "*Probably compared to most people I have known about it [climate change] for a long time*" (P1) and "*I consider myself to be quite environmentally sound, and my wife, we both do what we think are the right things*" (P1).

It is evident that some people feel empowered enough to have a sense of ownership over their personal carbon footprint and the things they can do to mitigate the effects of climate change. Participant 2 demonstrated an intrinsic form of self-determination (Deci and Ryan, 1985) by stating "*If I buy something, and the packaging looks like it costs more than the item I've bought then I will try to find some other use for that item. I try to repurpose that package before I throw it away. The sense of responsibility is part of my persona, just who I am*" (P2). In contrast Participant 1 appeared to demonstrate followership and according to Kelley (1988) followers are an equally important group in society because good leaders need followers. Participant 1 demonstrated a style of 'followership' that is very much needed within sustainable healthcare, whereby the follower is positive and willing but looks to the leader for direction because when asked why they had not engaged with the campaign they responded: *"I've never really thought about it [sustainable healthcare] that much but I will certainly be looking at things differently now"* (P1).

The ascription of responsibility for climate change has been well documented as an important pre-requisite for action (Peeters et al., 2019) however this concept seems to be achievable for people who are motivated, informed and confident in their actions. The ascription of responsibility may be quite daunting for those who lack confidence or those who look to others to help them ascribe collective responsibility. In Stern's (2000) Values-Beliefs-Norms (VBN) theory the ascription of responsibility is seen as an important element in the causal chain leading to environmentally friendly behaviours. However, it is important to recognise that not everyone may have the capacity to 'own' their contribution to climate change. This may be due to physical environmental constraints, a lack of confidence and knowledge, where the connections between actions and outcomes are less obvious or perhaps the need to seek help from others to facilitate that sense of ownership. Hourdequin (2010) supports this notion and suggests that a top-down approach is often needed to catalyse change and to help people understand the connections between their own actions and climate change.

Theme 4 - Motivations

Both participants were questioned about the environmentally friendly actions and behaviours that they currently engage with and whether these were influenced by society or by personal standards. Both participants stated that their behaviours were driven by personal standards to be environmentally friendly, however they evidenced this in very different ways.

Participant 1 was not able to explain any behaviours that were beyond community schemes "*When I go shopping, I take my reusable bags, and I get very annoyed with myself when I forget them, we recycle as much as we can, we have a compost bin*" (P1). Participant 1 was engaging

with local initiatives but unable to provide any examples of pro-environmental actions or behaviours that were taken independently (for example, switching to green energy providers, reducing meat consumption, making ecologically conscious consumer choices). Participant 1 may have originally been influenced by external sources but over time these have become internal motivations. Venhoeven, Bolderdijk and Steg (2016) found that people engaging in non-voluntary behaviours (acting in accordance with situational constraints) were found to exaggerate the positive emotions that they got from these normative behaviours.

By contrast, participant 2 demonstrated an intrinsic motivation to be environmentally friendly and described the satisfaction from switching old Tungsten lightbulbs firstly to compact fluorescent lamp (CFL) and then to light emitting diode (LED) "*I felt quite good about replacing the last two tungsten bulbs, because I've been all of the supermarkets and high street shops looking for them, I didn't want to throw the table lamps away and buy new ones because that's a waste*" (P2). This behaviour is an act that goes beyond local authority schemes, it requires time, money and effort and illustrates an intrinsic motivation to engage. This participant projected a positive self-image and a sense of wellbeing because of this voluntary behaviour, which is consistent with the findings of Venhoeven et al., (2016).

Kruglanski et al. (2002) suggests that motivational processes can be either unconscious, effortless and automatic or conscious and requiring effort. Commitment to a goal will depend upon whether the goal is focal or background. Focal goals are in a person's consciousness and hold immediate importance. They are at the forefront of awareness and the person is explicitly aware of these goals. Background goals may be more subliminal and subconscious, perhaps less important and when focal goals permit the background goals can be achieved. This all very much depends on *Attentional Resource Theory* (Cohen, 2001) or a person's *finite pool of worry* (Heidt,

2018) both of which accept that humans have a limited mental capacity for goal pursuit, as one goal is pursued others may suffer as a result. This was evidenced by participant 1 when questioned about the campaign "*No I just haven't [been involved], to be completely honest I've not been well for some time now, haven't been for about two years, and I haven't got any energy bar to come to work, what with CQC inspections"* (P1). In contrast participant 2 stated that "*I'm in a position where I'm financially stable enough that I don't have to worry about bills, I just pay them, I'm breaking even so I can worry about these kind of things [climate change]. Not that I can actually do a lot but...*" (P2).

It is evident that motivational processes are complex and multi-faceted (Peeters et al., 2019). Goals move in and out of the focal attention depending on the situational context and other competing priorities. Contextual factors such as financial stability appear to affect level of engagement, good engagement in low-cost behaviours and poor engagement in high-cost behaviours are consistent with the existing literature (Steg et al., 2005).

Theme 5 - Societal Influence

The second part of the interview asked participants to view a selection of the campaign webpages, during which both participants demonstrated that they had been influenced in some way by society or media. Participant 1 mentioned the influence of David Attenborough through the recent documentaries 'Blue Planet II' and 'Our Planet' which both carried strong environmental messages "*I suppose the David Attenborough programme, all of that plastic in the sea"* (P1). A study by Global Web Index (2019) found that the *Attenborough effect* had a profoundly positive effect on consumer habits in both the UK and the US, with 50% of those studied reporting a

reduction in single-use disposable plastics. Participant 2 talked a lot about Extinction Rebellion and despite disagreeing with some of their tactics stated that "*I have met them at various events, and I have listened to them, I can see where they are coming from certainly*" (P2). Global Web Index (2019) found that environmentalist media and high-profile activism are bringing the topic of climate change into the spotlight and this was evident from the two participants "*Unless you do bring it to people's attention and make a fuss, people don't really pay attention*" (P2).

During the interviews, when reviewing some of the advice offered on the campaign webpages, the notion of buying seasonal and locally sourced food came up. The campaign made recommendations for buying local and seasonal produce in their top 20 hints and tips. This is something that is becoming more visible in the media and it is discussed with a certain reverence and desirability of achieving the 'good life' (Foley, 2016).

Participant 1 reported that time and money were barriers to using local farm or high street shops "*I do use supermarkets and not local suppliers. This is mainly due to time and money"* (P1). Participant 2 added to this by challenging the accessibility of farm shops as they are often situated out of town "*I talked to my wife about this, trying to work out where our nearest local farm shop was, and I think it's about 10-12 miles from us*" (P2). In a report compiled by Garnett (2008) the issue of buying local produce was explored, and while supermarkets will often advertise local produce (often indicated with a Union Jack in the packaging) they will also offer everything else as well to keep in line with competitors. It is then down to the consumer to make their choices about seasonal produce and Garnett (2008) questions how much we should expect consumers to 'do the right thing' when they are presented with choice and temptation.

Participant 2 discussed the societal influence of the fashion industry and the observations made about the fashion industry and the younger generation and their relationship with clothes,

"*The notion of wear clothes once and throw them away mentality. I've still got clothes that I was wearing 20-30 years ago*" (P2). Greenpeace (2018) explore the concept of 'fast fashion' and found that on average people now buy 60% more clothes and keep them for half as long compared to 15 years ago. They cite numerous issues with the fashion industry such as the oil needed for synthetic fibres, water and land needed for cotton, energy and chemicals for making fabrics.

Both participants discussed lifestyle and societal expectations for maintaining what is deemed to be a happy and successful lifestyle. When exploring participants awareness of consequences of their own actions Participant 1 stated "*I don't really think about that, because I'm partial to travelling abroad, and I don't really think about the fact that I shouldn't, I don't holiday in sunny xxxxxx*" (P1). This may a form of selective inattention whereby the harmful effects of some activities are conveniently ignored (Marshall, 2014), but it is also a form of behavioural lock-in where an individual knows that the action or behaviour is wrong or bad in some way but is unable or unwilling to make a change (Seto et al., 2016) and as a result the term 'old behaviours die hard' is well known. Participant 2 commented that "*I can't see really see that we are going to get back to any sensible state without making some fairly major lifestyle changes and that is down to people*" (P2).

Discussion

This case study has provided an illustration of two members of staff from a community NHS Trust who had not engaged with an in-house sustainable healthcare campaign. This discussion will explore each of the research aims in relation to the results.

Aim 1: To give a voice to those who have chosen not to engage with the campaign, exploring their personal and professional values, beliefs, norms and behaviours around climate change and sustainable healthcare.

It was evident that both participants held knowledge about climate change and sustainable healthcare, therefore their choice to not engage with the campaign was not born out of a lack of knowledge, denial or ignorance. Although the knowledge varied between both participants in terms of how they acquired the knowledge they both demonstrated a genuine care for the environment because of their knowledge. This case study has highlighted that knowledge can be acquired from different sources, from tacit, local and lived experience, through to explicit, global and factual knowledge (Polanyi, 1966). The participants are just two examples of many, but it has illustrated that beliefs around climate change are based on different types of knowledge, and sustainable healthcare campaigns need to recognise the different knowledge and subsequent beliefs that are held around the topic to build a campaign that speaks to everyone. However, Whitmarsh (2011) cautions that even when presented with the same information, individuals will process and assimilate the information in different ways. This will continue to present a challenge and even with the most robust campaign a degree of *assimilation bias* will be present (Lord et al., 1979).

Political awareness was demonstrated by both participants but once again the origins of this came from different sources, in the same way that knowledge was acquired via tacit and explicit means. There appears to be a challenge in raising political awareness to enable those who hold tacit views to extend those to more global and explicit views, and similarly those who hold explicit views to understand the local implications in more detail (local versus global) (van der Linden, 2015). Research has consistently demonstrated that people who hold tacit knowledge and have a good local political awareness of climate change are far more likely to engage with pro-environmental behaviour (Zaval, Keenan, Johnson and Weber, 2014).

To take explicit knowledge and assimilate and process into personal meaning requires high level conceptual thinking (Peeters et al., 2019) therefore for many people this is not either achievable or a priority. Therefore, converting explicit global political knowledge of climate change into local and meaningful messages is going to be key for sustainable healthcare campaigns to speak to those who need something local and tangible to bring the topic to life (Bouman and Steg, 2019). It should however be noted that the participant who had been interested in the climate for many years by default had an advantage with political knowledge because they had simply been 'in-tune' to political events for longer.

Both participants demonstrated differing degrees of ownership and motivation to act and behave pro-environmentally. However, the origins of their motivation differed. There was evidence to suggest that one of the participants was internally motivated and was able to talk at length about the personal actions and behaviours taken to look after the environment. The other participant appeared to be externally motivated as they were unable to give examples of any personal pro-environmental actions they had taken but despite this they were actively engaging behaviours linked to prescribed local authority or government schemes. It is important to recognise

that those with externally driven motivation play an important part in the mitigation of climate change and given the correct instruction and permission will dutifully act in accordance with an authority (Milgram, 1974). These people may appear to lack motivation but in fact they have other competing priorities in their life and simply want to be told what to do and when. These people are often excellent followers (Kelley, 1988) and while research tells us that people being able to ascribe personal responsibility for mitigation is ideal (Bouman et al., 2020), there will always be a large percentage who do not have the time, energy or intrinsic motivation to take a lead role (Parker, Karlsson and Hjerpe, 2014). There are many on the back benches who are ready, willing and able but await clear instruction (Parker, Karlsson and Hjerpe, 2014).

The followers who await clear instruction may need more formalised means of engaging with sustainable pro-environmental behaviours. Reliance on volition of staff to voluntarily engage may only be effective for some, and healthcare organisations need to consider how the rest of the staff population are enlisted and engaged. Greening of policies and procedures that directly affect staff may well be the answer to a more structured and compulsory engagement of all staff at all levels (Ahmad, 2015). Kane (2011) suggests the introduction of 'green' performance indicators into job roles could be the solution, with a range of tangible rewards such as pay, psychological rewards in the form of praise and sense of achievement, and social rewards in feeling part of a bigger movement. This may well be the next step for large NHS organisations to embed sustainability into every job role. However, Kane (2011) cautions that failure to involve staff in role redesign could lead to staff feeling demotivated and disengaged.

Organisation based incentives to engage in pro-environmental behaviour are not widely used according to a survey by Zibarras and Ballinger (2011). However, there are some examples globally of incentives that are used quite successfully. For example, a bicycle component

manufacturing company in the US encourage their staff to cycle to work and in turn they offer all bicycle commuters credit in the café (Chris King Precision Component, 2020). However, these examples are sparse and the challenge with offering rewards is the risk that motivation becomes extrinsic in source. Kane (2011) cautions that there needs to be a balance between types of reward to elicit both extrinsic and intrinsic motivations.

The participants held certain beliefs about sustainable healthcare and climate change mitigation. However, they varied in their ability to think laterally or critically about those ideas. This poses a further challenge for sustainable healthcare campaigns because on the one hand there is a basic need for clear and simple messages. However, there is also the need to invite people to share their views, concerns and ideas (Rayner and Minns, 2015). The solution may be greater staff engagement through the campaign, not just in terms of activities for staff to complete but real and meaningful sharing of experiences to solve problems, to share and debate ideas and to confront cultural beliefs around sustainable healthcare to enable staff to understand the barriers and the challenges associated with the solutions (Kane, 2011). It seemed that the campaign was still not understood by staff and perhaps more face-to-face engagement was needed. In addition, the campaign may be able to recruit and utilise those who are already living and enacting pro-environmental behaviours to become people of influence at the grass roots. Dittmer and Reimer (2012) found that mass marketing often resulted in small behaviour changes, but an intense focus on a few people had a great ripple effect within that individuals immediate social circle at home and at work. Zibarras and Ballinger (2011) found that the recruitment of ‘green champions’ was deemed to be one of the top five actions that organisations can take to promote pro-environmental behaviour.

There were some very interesting discussions around societal influence and climate change. One participant discussed the societal influence on pro-environmental behaviour from the perspective of an outsider. This participant made observations of society and the trappings of modern life, able to see and describe the problems associated with consumerism, media and western culture. The other participant made comments about social influence from the perspective of someone caught up within and despite demonstrating a willingness to make minor lifestyle changes it was clear that a degree of behavioural lock-in was present.

At the time of writing this discussion, during the 2020 Covid-19 global pandemic, the notion of behavioural lock-in for many is being radically challenged (Hepburn et al., 2020). Gifford (2011) recognises the damage that habitual behaviours have caused and the contribution to climate change. However, now behaviours around consumerism and international holidays have been forced to change, potentially breaking the cycle of *behavioural momentum* (Nevin, Mandell and Atak, 1983). Only time will tell if this pandemic will have a positive legacy in terms of more pro-environmental habits as people have had the opportunity to discontinue their habits and reflect on life without their summer holiday and life without the latest fashion accessories (Verplanken, Roy and Whitmarsh, 2018). Ipsos (2020) found that 65% of people supported governments taking a 'green' recovery from Covid-19 but they also found that on a personal level people were only likely to engage in low effort and low-cost pro-environmental behaviours, representing little change since their last survey in 2014. Le Quere et al. (2020) caution of a rebound effect that may occur.

Aim 2: To establish if non-engagement is due to people being disengaged or making a conscious choice to simply not engage.

Gifford (2011) recommends that the barriers to action on climate change need to be researched in different groups and different contexts. This research provides an insight into some of the reasons why people may not have engaged with the campaign. This may on the surface appear to be disengagement but in fact, both participants, although very different, demonstrated genuine care for the environment, to the extent that one participant declined the voucher incentive offered and took part out of good will alone. Therefore, non-engagement is a choice but not an indicator that staff are disinterested nor in denial nor un-environmentally friendly. The reasons for non-engagement are explored below and it is likely that there are many more reasons than those discussed here.

Aim 3: To shed light on the factors that deter people from engaging with the campaign through a review of the online material.

From the two participants interviewed it was evident that there were several factors that may have been deterring them from engaging with the campaign. These factors were different for each of the participants but can be broadly grouped into the following categories: physical / environmental barriers; proximal priorities; and the campaign messages.

The physical / environmental barriers were diverse in nature. These barriers included things like struggling to buy local and seasonal produce due to the proximity to a farm shop, plus the time is takes to shop locally as opposed to doing one supermarket shop each week. Other physical barriers were in relation to travel and the need to use a car for work and not owning a bicycle.

Vroom's (1964) *Expectancy Theory* identifies physical factors such as the immediate environment, time and money as barriers to motivation. It is only when the value placed on the outcome and the reward for the outcome becomes so great that the physical barriers can be overcome.

In this case study it was evident that proximal priorities were linked to both the individual's life-stage and to their financial stability and is consistent with the findings of Whitmarsh (2011). Participant 1 was working full-time with a family to care for, and described little time, energy and inclination to engage with the campaign, it was simply not a priority alongside work and personal pressures. Milfont, Poortinga and Sibley (2020) found that becoming a parent had little impact on environmental concern, with situational and economic factors often taking proximal priority. Despite participant 2 being semi-retired, financially secure, and having the time to commit to sustainable behaviours, they had also not engaged. These findings are in opposition to current trends and data around gender and age and environmental concern, which typically sees women and younger people more engaged than men and older people (Poortinga et al., 2019).

The rudimentary messages offered out by the campaign were evident as participants went through the 20 top-tips to being sustainable. Many of the top tips were civic duty such as recycling and composting. Thomas and Sharp (2013) found that recycling for a large percentage of the UK population had become normalised and habitual. In addition, engagement with reusable shopping bags and coffee cups are also examples of the campaign top tips. Poortinga, Saultkina, Thomas and Wolstenholme (2016) discuss the significant and lasting positive impact that the 5 pence surcharge on disposable carrier bags has had on behaviours and attitudes. The shift to reusable shopping bags, four years ago, is also now a widely accepted as normal practice (Thomas, Sautkina, Poortinga, Wolstenholme and Whitmarsh, 2019) yet it remains one of the campaigns

‘top tips. Therefore, these top tips have almost become outdated now and this should be opening the way for more alternative behaviours that are not already being adopted.

Theoretical, Practical and Research Implications

This case study has highlighted six key implications:

1. Contextual barriers and situational constraints continue to exist and prevent people from engaging in pro-environmental behaviours. Sustainable healthcare campaigns must simultaneously work to address some of these barriers while also promoting viable alternatives when the barriers exist.
2. Some pro-environmental behaviours promoted within campaigns may now be outdated. From a practical point of view there is a need for campaigns to promote contemporary pro-environmental behaviours and move away from things which may be normalised behaviours.
3. Campaigns need to use structured research to understand the individual's journey and sub-cultures that exist within staff groups and the general worldviews and outlooks. This will provide vital insight and enable campaigns to be tailored to staff needs.
4. Campaigns need to engage staff face to face, through a practical process of active participation. Reliance on good will alone may not be enough and more education and two-way dialogue is needed to foster a sense of ownership.
5. For those who lack motivation or direction, the integration of sustainability into all job roles may create a sense of much needed accountability.

6. From a theoretical perspective, non-engagement may not be an indicator of disengagement and the reasons for non-engagement are complex and varied.

Limitations

The limitations of case study research are the sample size and the fact that generalisations cannot be made. However, this research provides an insight into non-engagement and a platform from which future research can build. Participants were also selected based on their involvement of the previous phase of the research and although they declared that they had not taken part in the campaign, their willingness to take part may indicate a positive bias or interest towards the topic. As a result, there are still sections of the community Trust workforce that have not be adequately represented within this or the previous phase of the research. Finally, as with previous elements of research within this portfolio there is a risk of self-reported data and the risk that this may not represent actual behaviour.

Conclusion

To date within this research, value orientation has been explored and altruist orientation identified as a group of interest. The altruists may represent a significant proportion of staff within UK healthcare, but it is important to recognise that for these people, climate change may not be a focal priority. That is not to say that they are disengaged but simply the nature of their work, coupled with a finite pool of worry means they are unable to place climate change within their proximal priorities. Situational constraints and contextual barriers at home and at work continue to present reasons for non-engagement.

This research has found that non-engagement is not always an indicator of moral disengagement with the topic and it is important for any healthcare organisation to understand more fully the values and beliefs of its workforce. Creating a campaign that relies on goodwill alone may have limited success and perhaps a level of responsibility and governance need to be delegated out to staff to embed pro-environmental behaviours into everyday work and reliance on goodwill alone may simply be not enough. There are also strong advocates who are already living pro-environmentally, therefore campaigns need to consider how these people may be recruited and utilised at grass roots. Finally, campaigns need to reflect contemporary pro-environmental behaviours and move away from actions that have become normalised.

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Appendix 14: Participant Information Sheet

An exploration of the factors that affect non-engagement with a sustainable healthcare campaign

My name is Chloe Griggs and I am completing doctoral studies at Canterbury Christ Church University (CCCU) under the supervision of Prof. Margie Callanan. I am also a registered nurse-lecturer and I have a keen interest in climate change and sustainability. As part of my PhD I am keen to gain information from people who work in healthcare about climate change and the sustainable healthcare campaign within your organisation. I would like to invite you to take part in a research study.

In this research study I will use information from you. I will only use information that I need for the research study. I will let very few people know your name or contact details, and only if they really need it for this study.

Everyone involved in this study will keep your data safe and secure. I will also follow all privacy rules.

At the end of the study I will save some of the data [in case we need to check it].

I will make sure no-one can work out who you are from the reports we write.

The information pack tells you more about this.

(Part 1 tells you the purpose of this study and what will happen to you if you take part.

Part 2 gives you more detailed information about the conduct of the study).

Part 1

What is the purpose of the study?

This research will explore the reasons why you have chosen not to engage with the sustainable healthcare campaign XXXXX.

Why have I been invited?

You have been invited because you work for XXXXX which is where this research is taking place. You also complete a questionnaire in 2018 and stated that you were happy to be contacted in the future, your response indicated that you had not heard of XXXX or XXXX – which is why I am keen to talk to you.

Do I have to take part?

It is up to you to decide whether to join the study. You are free to withdraw at any time, without giving a reason.

What will happen to me if I take part?

You will be invited to take part in a one to one interview with me exploring the factors that have led you to choose not to engage with the sustainable healthcare campaign. Opinions from all staff are very important. The interview should last approximately 1 hour and can be arrange on a date and time that is convenient to you. The interview will be held at XXXX.

Expenses and payments

Other than your time you will not incur any expenses, however if you do take part we are offering a £50 gift voucher redeemable when you book a camping, glamping or campervan trip via 'Cool Camping'.

What will I be asked to do?

You will be asked some questions about your own views on climate change and you will also be asked to give your opinion on the XXXX campaign.

What are the possible disadvantages to taking part?

You may feel uncomfortable sharing your views on climate change but it is really important that we hear your story and understand your point of view.

What are the possible benefits of taking part?

We cannot promise the study will help you but the information we get from this study will help improve our understanding of the factors that influence staff choices around engagement in sustainable healthcare campaigns.

What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. The detailed information on this is given in Part 2.

Will information from or about me from taking part in the study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence.

This completes part 1.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2

What will happen if I don't want to carry on with the study?

If you start the interview but then decide you do not wish to carry on you can end the interview at any time and withdraw from the study.

What if there is a problem?

If there is a problem you can decide if you wish to continue or not. If you want to make a complaint please follow the instructions below.

Complaints

If you have a concern about any aspect of this study, you should ask to speak to me and I will do my best to address your concerns. You can contact me by leaving a message on the 24-hour voicemail phone number 01227 767700 Ext 2029. Please leave a contact number and say that the message is for me Chloe Griggs

and I will get back to you as soon as possible. If you remain unhappy and wish to complain formally, you can do this by contacting Fergal Jones, Research Director, Salomons Institute for Applied Psychology – fergal.jones@canterbury.ac.uk, tel: 01227 927110

How will we use information about you?

I will need to use information from you for this research project. This information will include your name and contact details. I will use this information to do the research. People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead.

Once I have finished the study, I will keep some of the data so I can check the results. I will write up reports in a way that no-one can work out that you took part in the study.

What are your choices about how your information is used?

You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.

What will happen to the results of the research study?

You will be asked if you wish to see a copy of the initial summary which should be available in draft format towards the end of 2020. The draft will contain a summary of key findings and the relationship to the existing body of literature on the subject. You will also be offered details of the final published version which is likely to be available in 2021 via an academic or clinical journal. The findings from this project will eventually form part of a PhD thesis and this will be presented to a board of examiners on site at CCCU.

Who is organising and funding the research?

Canterbury Christ Church University.

Who has reviewed the study?

This study has been reviewed and given favourable opinion by the Health Research Authority and The Salomons Ethics Panel, Salomons Institute for Applied Psychology, Canterbury Christ Church University.

Where can you find out more about how your information is used?

You can find out more about how we use your information at www.hra.nhs.uk/information-about-patients/ or by asking one of the research team by sending an email to chloe.griggs@canterbury.ac.uk , or by ringing us on 01227 767700 ext. 2029.

Who to contact for specific information about this research project:

If you would like to speak to me and find out more about the study of have questions about it answered, you can leave a message for me on a 24-hour voicemail phone line at 01227 767700 ext. 2029. Please say that the message is for me (Chloe Griggs) and leave a contact number so that I can get back to you. Or you can send me an email via chloe.griggs@canterbury.ac.uk

Who to contact for advice as to whether you should participate:

You can talk to Margie Callanan who is the research supervisor for this project. Margie can provide advice as to whether you should participate and you can leave her a message on a 24-hour voicemail phone line at 01227 927094. Please say that the message is for Margie and leave a contact number so that she can get back to you. Or you can send Margie an email via margie.callanan@canterbury.ac.uk

Who to contact if you are unhappy with the study:

You can talk to Fergal Jones who is the Research Director at Salomons Institute for Applied Psychology. You can leave Fergal a message on a 24-hour voicemail phone line at 01227 927110. Please say that the message is for Fergal and leave a contact number so that he can get back to you. Or you can send Fergal an email via – fergal.jones@canterbury.ac.uk

Appendix 15: Consent Form

Centre Number:

Study Number:

Participant Identification Number for this study:

CONSENT FORM

Title of Project: An exploration of the factors that affect non-engagement with a sustainable healthcare campaign.

Name of Researcher: Chloe Griggs

Please initial box

1. I confirm that I have read and understand the information sheet dated 17th January (final version) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. ☐

3. I understand that data collected during the study may be looked at by the lead supervisor Margie Callanan. I give permission for him to have access to my data. ☐

4. I agree to the use of audio recording during the interview. ☐

5. I agree that anonymous quotes from my interview may be used in published reports of the study findings. ☐

6. I agree for my anonymous data to be used in further research studies ☐

7. I agree to take part in the above study. ☐

Name of Participant_____ Date_____

Signature _____

Name of Person taking consent _____ Date_____

Signature _____

Appendix 16: Interview Schedule

Thank you for agreeing to meet with me and to take part in this research project. The interview will be divided into two parts, the first part will explore your own views on climate change and sustainable healthcare; then the second part is exploring the factors that have influenced your decision not to take part in XXXX campaign. It is important that you feel able to be completely honest in your responses therefore please rest assured that your identity will not be revealed in the analysis or write up.

Part 1: your views

a) Can you give me a little background to your general views on climate change and sustainable healthcare?

b) When did you become aware of climate change issues? How did you come about this information?

c) How would you describe the climate change to someone who had now prior knowledge of the topic?

d) When making everyday decisions at home and at work, how do you balance your own needs, the needs of those around you, and the needs of the wider eco-system?

e) When thinking about climate change, can you tell me how you feel about your personal responsibility to reduce the effects of climate change?

f) Can you tell me how often you think about the consequences of your actions in terms of the impact on climate change?

g) When making decisions that are environmentally conscious are your motivations driven by personal standards that you set yourself (a personal desire to be environmentally friendly) or are they set by society?

h) Can you give me some examples of environmentally friendly behaviours that you have adopted at home and at work?

i) Is there anything else you would like to add that would help explain your values and beliefs about climate change and sustainable healthcare?

Part 2: XXXX CAMPAIGN

If we can now think about you and the XXXX campaign.

a) Are there any particular reasons why you have not taken a dare as part of the XXXX campaign?

Participant will be presented with 3 screen-shots of the campaign webpages (1: homepage; 2: Take a Dare; 3: Top Tips).

b) I would like to show you some of the campaign web-pages and was hoping you could tell me what your first impressions are?

c) What message do you get from the campaign?

d) What do you think of the language / colours / images?

e) Are there any particular values or beliefs that you feel this campaign is appealing to?

f) Does this information make you want to take part? Can you explain?

Chapter 6

Reflective Account and overarching synthesis and commentary

Introduction

This final chapter provides an overarching synthesis and commentary on the research processes and outcomes. Nielson et al. (2020) recommend that psychologists create a fusion between the psychological theories and the practical interventions to make a meaningful contribution to climate change mitigation.

This chapter is formed of five components. The first examines the research methodology that underpins the whole portfolio along with the benefits and disadvantages of the methods deployed in each chapter. The second component examines the theoretical contribution that this portfolio offers to the field of environmental psychology. The third component explores the overarching practical implications that can be drawn from all chapters of the portfolio and it addresses four key practical contributions that this research makes. The fourth component examines the limitations and recommendations for future research. Finally, the fifth component is a personal reflection on the impact this research had on me as an early career researcher.

Reflection has been a fundamental part of this research journey and will be utilised within this final chapter. The process of reflection has helped me to see the benefits and learning which have surfaced during the process of doing research and being a researcher. Reflection has helped me to remain grounded and mindful, it has helped me to enjoy all aspects of the research rather than working as a means to an end. Keeping a reflective journal has enabled me to capture some of the milestones, both positive and negative, framing the whole learning process. The research has been both mentally stimulating, emotionally rewarding and morally significant.

Research Methodology and Methods

Upon reflection the use of an exploratory sequential design was appropriate for this research as it allowed each phase to be iterative and informed by the findings of the previous phase (Natasi, Hitchcock and Brown, 2010). With limited information on the topic of climate change, sustainable healthcare and psychology of healthcare staff it was difficult to plan the whole portfolio at the beginning. Therefore, the exploratory sequential design allowed important concepts to emerge. The structure of the PhD portfolio and the sequential design supplemented one another and allowed the knowledge to be constructed in a logical and stepwise fashion.

The possible disadvantages of a sequential design and portfolio thesis may be a lack of depth on any given aspect in terms of data collection. The portfolio is designed to break the research down into manageable sections, to allow clinicians and practitioners to complete research while working. This is a real strength of the programme as it can be daunting to complete one large piece of work (Karp, 2009) but may also be a weakness as it reduces the overall depth and intensity of traditional research (Farrow, 2006). This portfolio presents multi-method research as opposed to true mixed methods research (Teddlie and Tashakkori, 2010). However, the new knowledge offered within this portfolio is of greater value than perhaps one large piece of research as it provides a diversity and holistic insight, rather than just one large study (Teddlie and Tashakkori, 2010).

This research illustrates the currency and relevance of the *human interdependence paradigm* (Gärling, Biel and Gustafsson, 2002) which remains an extremely important theoretical concept within the field on environmental psychology. The need for individuals to make decisions

based on collective good is unwavering yet difficult to achieve. This research has demonstrated some of the challenges of engaging individuals in a complex subject such as climate change and environmental sustainability, particularly when pro-environmental decisions often lack tangible short-term benefits. Future research should be situated within this paradigm and should seek to establish how collective engagement can be achieved.

Chapter 1 presented the work of Stokols (1978) who discussed the *forms of human transaction with the environment* which consists of two cognitive phases whereby humans interpret and then evaluate, and then two behavioural phases whereby humans operate within the environment and then respond to the environment. This research has contributed to the cognitive phases of Stokols model, providing an insight into the psychological processes by which people interpret and evaluate their environment (by values, beliefs and norms). This research has included three of the four phases but it did not include the final phase which explores the impact of the environment on people and their wellbeing. Stokols (1978) suggests that researchers should strive to conduct research that incorporates all four phases of transaction and this is a key recommendation to future researchers within the field.

The *VBN Theory* (Stern, 2000) played a pivotal role in understanding how beliefs and norms mediate the relationship between values and pro-environmental behaviour. The theory demonstrated predictive qualities with low-cost behaviours and further research is needed to examine if the theory holds any significance for more costly or weighty decisions that lead to pro-environmental behaviours. Perhaps the issue is less to do with the theory itself and more to do with the quality and reliability of the scales used to gather data on each element, and a more consistent approach to future research is needed whereby the same set of validated scales are used in a variety of contexts and disciplines.

The qualitative research methods used within small scale research project and the case study added depth and meaning to the topic. The case study research method provided a richness that had not been captured elsewhere. According to Crowe et al. (2011) case study research allows complex subjects to be explored in context and it was this element of the research, the report for professional practice, that provided some of the most insightful findings. The online questionnaire proved an efficient means of accessing a broad sample in the small-scale research (Finfgeld-Connett, 2015) while the use of one-to-one interviews allowed depth of enquiry for the case study (Hancock and Algozzine, 2006). Thematic analysis allowed the qualitative data to be examined in a highly practical fashion and Braun and Clarke's (2006) stages are set out in a logical and user-friendly format.

The use of a quantitative research methodology in the form of survey research was an opportunity to gain a wider perspective from a larger sample. This methodology complimented the whole portfolio as it was a chance to step away from the rich and complex data gathered in the qualitative stages and to take a broader view of the topic with more objectivity and accuracy (Fink, 2005). The use of both qualitative and quantitative research within this portfolio supports the pragmatist notion that these paradigms can be used together as a complimentary way of exploring a topic (Tashakkori and Teddlie, 1998). Mediation analysis had been used within previous studies examining the VBN model (Steg, et al. 2005; de Groot and Steg, 2008; Choi et al. 2015; Chen 2015) and continues to be the most appropriate means to establishing a causal chain.

Theoretical Contribution

This portfolio has provided a baseline of research data in the UK in the field of environmental psychology and healthcare. Evidence suggests a plethora of barriers to sustainable healthcare, ranging from the daily pressures of working in healthcare associated with things like time, resources and sick patients (Dunphy, 2014**)** through to psychological barriers associated with moral offset (Anåker et al., 2015), environmental numbness (Dunphy, 2014), and, feelings of helplessness and futility (Anåker and Elf, 2014). Despite the barriers to engagement, this research has indicated that there may be general concern for the environment amongst UK healthcare staff. Concern for the environment for some people is enough to motivate them to act pro-environmentally and the case study presented an example of someone who is pro-environmental in many aspects of life. However, there are also many people who despite their concern for the environment are not motivated to act. The reasons for this non-engagement are varied and complex. One key theoretical contribution has been drawn from each of the four parts of this portfolio (Table 27), and there is a fifth theoretical contribution that is largely associated with a gap in knowledge, all of which are discussed in the next section.

Table 27

Five theoretical contributions to environmental psychology

	Theoretical Contribution	**Description**
1	Barriers to engagement	Limited published theory demonstrates a global problem with engagement in sustainable healthcare; barriers to engagement; range of psychological processes or manoeuvres exhibited to avoid engagement; presence of situational constraints and contextual barriers.
2	UK staff perceptions	An insight into UK healthcare staff perceptions. Confirmatory that many of the barriers exist in the UK. An insight into the concept and role of values within environmental psychology and healthcare.
3	VBN theory within UK healthcare	This is possibly the first time that the VBN theory has been used within a UK healthcare setting. Model works well with small behaviour changes.
4	Engagement, non-engagement and disengagement	Explores non-engagement. Non-engagement is not the same as disengagement. Reasons for non-engagement complex and varied.
5	Home versus work	Sustainable healthcare campaigns often advocate small lifestyle changes at home, but is there any evidence that these translate into positive changes at work?

Barriers to engagement

The literature review and subsequent elements of research demonstrated a lack of published research globally in the field of environmental psychology within healthcare. Of the research published there was a strong theme of disengagement from healthcare staff towards the concept of climate change and sustainable healthcare (Griggs et al., 2017). This literature review was the first of its kind to review the global research and via a systematic process collated the findings into a meaningful theoretical contribution. One of the strongest themes was around the psychological processes or manoeuvres that individuals use to avoid engagement. These psychological barriers took many forms and affirmed that many well-known (Swim et al. 2009) psychological processes were present amongst healthcare staff (Anåker and Elf, 2014; Anåker et al., 2015; Dunphy, 2014).

The contextual barriers and situational constraints were a reoccurring theme in all aspects of this research and while the focus of this portfolio was on the psychological barriers it is important to recognise the importance of these situational constraints. The presence of situational constraints and feelings of helplessness may cause the deployment of psychological manoeuvres. It is possible that by removing situational constraints the psychological manoeuvres may also be reduced. Lind et al. (2015) stress the importance of context when examining values, beliefs and norms in environmental research.

The theoretical contribution of this element is twofold. Firstly, it provided a baseline of knowledge and a psychological insight into sustainable healthcare and barriers that exist. This knowledge not only allows future researchers to be conscious of the psychological processes at play, but it also allows healthcare organisations to understand some of the complexities of engagement and disengagement. Secondly, this illuminates the presence of situational constraints and contextual barriers both at home and at work. Successful sustainable healthcare campaigns will work in tandem to engage staff while also working to reduce the physical barriers that exist within the workplace.

UK staff perceptions

The small-scale research project sought to explore UK staff perceptions to see if some of the findings from the literature review were present in a UK sample. This stage was exploratory in nature and led by the findings of the literature review. The theoretical contribution of this stage has two elements. The first was that the findings of the literature review were in fact also found within a UK sample of healthcare staff, with many physical and psychological barriers present

which affected engagement with sustainable healthcare and climate change. The second contribution was the notion that value type or orientation affects engagement with sustainable healthcare.

Value types and engagement with sustainability have been researched in several other disciplines such as ecological economics (Turaga, Howarth and Borsuk, 2010) and consumer decisions about green hotels (Choi, Yang and Kadampully, 2015), however to date there was no research in UK healthcare to link value orientation to engagement within sustainable healthcare. This research provided a tentative insight into a group of staff who were psychologically engaged with the concept of sustainable healthcare but unsure of what actions or behaviours they could implement in practice. Although the sample size of this stage was small it provided some early findings that may be of use for future researchers.

VBN theory within UK healthcare

The applied research project used the VBN theory (Stern, 2000) to ultimately test if value orientation predicted engagement with pro-environmental behaviours. The findings of this stage make an important theoretical contribution as the VBN theory was found to have predictive power when linked to small and inexpensive behaviour changes. This is important for policy makers and organisations alike as there is strong evidence to understand the value orientation of employees to tailor communications.

While this stage of the research makes a small theoretical contribution in terms of the findings it also highlights the gaps in knowledge that continue to exist. With the VBN theory only capable of predicting small and inexpensive behaviour changes, there is an emerging need for a

theory that captures the larger and more expensive behaviour changes. Steg, Dreijerink and Abrahamse (2005) also question the VBN theory when there are costly behavioural decisions and infer that the personal norms element of the causal chain is affected when making bigger decisions. In addition, Clayton et al. (2016) found that many behaviours have a deep cultural and contextual root and are harder to change.

Perhaps there is a need to create a model or theory that captures the complexity of the more serious pro-environmental decisions which is supported by Choi, Jang and Kandampully (2015) who found that the VBN theory needed constructs to address the barriers to action. Clearly, not all researchers are in favour of the VBN and Kaiser, Hübner and Bogner (2005, p. 2166) noted some "empirical insufficiencies" and favoured the *Theory of Planned Behaviour* as a means of predicting pro-environmental behaviour. Many authors are now favouring modified or extended versions of the VBN which consider additional concepts that allow more costly behaviours to be examined (Fornara et al., 2020; Lai et al., 2020).

It is important to recognised the limitations of the tools used within the VBN theory and the MTES tool. The MTES as a whole scale appeared reliable but two sub-scales were unreliable. The inclusion of these unreliable sub-scales may have affected the findings and the success of the VBN theory. Further research is needed in healthcare to establish if it is the VBN as a whole (does the VBN sufficiently capture the complexity of facets that influence behaviour) or the instruments selected (Universal Values Scale, New Ecological Paradigm etc) that affect the power and significance in predicting more expensive behaviours, or research that instead uses the *Theory of Planned Behaviour* (Ajzen, 1991).

Engagement, non-engagement and disengagement

The report on professional practice case study adds a theoretical contribution around the nature of non-engagement with a sustainable healthcare campaign. This stage provided an insight into two contrasting cases of non-engagement. The reasons for the non-engagement were complex and varied and this provides a snapshot in time into some of the possible reasons for non-engagement. This research has illustrated that engagement with sustainable healthcare is very much dependent on an individual's own circumstances and what sparks an interest for one person may not for another, or what compels one person to act may have no effect on another. Clayton et al. (2016) acknowledge how difficult it is to do research that fully embraces all the contextual factors and how these affect the degree of pro-environmental engagement.

This research demonstrates that non-engagement does not automatically mean disengagement and, in some instances, non-engagement was due to the rudimentary nature of the campaign and the advice given. In the other instance, non-engagement was due to the complexities of life and sustainable healthcare simply not falling within proximal priorities. Further research is needed to explore personal circumstances, the development of a tool or instrument would be useful to assess pro-environmental engagement, something that takes into consideration life experiences, context and proximal priorities over an extended period (Clayton et al., 2016).

Home Versus Work

This theoretical contribution has manifested because of the whole portfolio synthesis and does not relate to one aspect of research, and instead it is a concept that has emerged in the writing of this final chapter. It is not clear if positive lifestyle changes made at home translate into positive

behavioural changes at work. The literature review and small-scale research suggested a home/work gap exists for UK healthcare staff whereby they struggle to enact their pro-environmental behaviours at work due to situational constraints (Dunphy, 2014). The campaign examined in the applied research project focussed on behavioural changes at home. Therefore, more research is needed to explore if people can take their values to work (despite the physical barriers that exist).

Practice Impact and Implications

With the theoretical implications outlined, it is also important to identify the practical implications and this section offers healthcare organisations four over-arching practical implications (Table 28): understanding the staff and their values beliefs and norms; creating the right message to promote sustainable healthcare; small yet achievable pro-environmental behaviours should be promoted; and engagement and accountability needs to be formalised within all roles.

Table 28

Four overarching practical implications of this research

	Practical Implications	**Description**
1	Under-standing	Any organisation wishing to implement a sustainable healthcare campaign must firstly understand the staff values, beliefs, norms and behaviours at all levels to implement a campaign that truly speaks to the staff. This should be done through structured research activities. In addition, staff engagement in the design and implementation is vital to ensure ownership.
2	Message	Value framing to promote pro-environmental actions to different target groups. A widespread openness about ecological worldviews is needed within organisations, and key narrators must lead by example as role models within the organisation.
3	Action	Small pro-environmental behaviour changes are more likely to be adopted and normalised, and they collectively add up to a meaningful societal contribution. Behaviour changes that are promoted by healthcare organisations must be contemporary yet achievable.
4	Engagement and Accountability	Reliance on 'good-will' alone is not enough to engage all staff. Job roles need to be revised to devolve a small degree of responsibility to every member of staff within an organisation to engage pro-environmental behaviours and thus create sustainable healthcare.

Understanding

The literature review and the small-scale research project illuminated the stark absence of global research in the field of psychology, climate change and sustainable healthcare. At that early stage it was apparent that many organisations were trying to implement changes associated with sustainable healthcare without fully understanding the values, beliefs, norms and existing behavioural patterns of staff. Implementing change without firstly assessing the current state of play is risky and jeopardises the success of the campaign or intervention (Udod and Wagner, 2018). Organisations must also understand the situational constraints and contextual barriers that exist and that prevent staff from behaving pro-environmentally at work (Lind et al., 2015).

The applied research project used mediation analysis to confirm that an individual's value type was likely to be the most significant predictor of pro-environmental behaviour. Organisations may find it useful to start with research that establishes the predominant value types to pitch communications and campaign material appropriately. Different value orientations require different approaches, and the organisation may wish to decide if their campaign targets some or all value types, however it is evident that a 'one size fits all' approach is unlikely to be successful (Hendricks, 2017). Wolsko, Ariceaga and Seiden (2016) found that political orientation has a significant impact on the adoption of pro-environmental behaviour, with politically liberal people being more likely to act pro-environmentally than politically conservative people. They suggest that environmental discourse has historically been pitched towards liberal values and as a result can exclude conservative values. This emphasises the need to understand employees prior to the creation of any campaign.

Once a baseline of knowledge within an organisation has been established, there is also a need for staff engagement in the design and implementation of the campaign. The report for

professional practice provided an example of how one member of staff within the community NHS trust knew very little about the in-house campaign. Without the 'good will' to look at the campaign webpages there was no other means of engagement, and the participant and their team may be an example of where a face-to-face intervention is needed. This intervention may serve a dual purpose whereby the organisation gets to understand the staff more, and the staff get to understand ways in which their team can work more sustainably. Clayton et al. (2016) advocate participatory methods to ensure inclusion and diversity, and Ross et al. (2015) found participatory research was effective in raising knowledge through social learning.

This portfolio presents a brief insight into the field and further research is needed on an organisational basis to explore the values, beliefs, norms and behaviours of UK healthcare staff. Kelly and Barker (2016) suggest that this is a vitally important stage for organisations to understand the lived experiences of staff to tailor campaigns to the areas of most need. This is supported by Clayton et al. (2016) who urge responses to climate change to be sensitive to not only how people function within their job roles (acknowledging the occupational constraints to pro-environmental behaviour) but also how they think, feel and interact with the environment.

Message

The small-scale research project identified a discreet group of people who were concerned about the environment but unsure of what actions to take. It is possible that there may be a much larger group of people in the same position across the UK healthcare sector, who are aware of climate change but unsure of what actions they can take at work. Kelly and Barker (2016)

document some common mistakes that campaign designers make. One notable issue relevant in this context is the simple notion of getting the message across.

Kelly and Barker (2016) found that getting a simple message across to an audience is in fact a very complex act that not only requires an understanding of the audience (as discussed in the previous section) but also an appreciation of how message framing influences the person receiving the message. The popularity of the message can largely depend upon who is delivering it and Clayton et al. (2016, p.200) recommend that messages are delivered by diverse "environmental actors". Two examples of such actors in the field of climate change are Greta Thunberg and Extinction Rebellion. Part of Greta's success is owed to her intergenerational message and her relatability, just a school age girl with a story to tell. In addition, Extinction Rebellion advocate civil disobedience and target people who are feeling disassociated with the political elites and industries that harm the climate (Bevan, Colley and Workman, 2020).

The small-scale research provided an insight into those who demonstrate a concern for the environment yet lack confidence or motivation to act. These individuals may look to others for guidance or direction but there is often a lack of visible pro-environmental values within organisations (Bouman and Steg, 2019). This lack of visibility may be compounded by the documented evidence from those who been ridiculed for speaking out about climate change (Sparkman and Attari, 2020). In recent years many organisations and businesses such as Ford (2020) are openly stating their environmental values and Reupert, Kaiser and Steg (2017) found that employees within organisations with a visible corporate environmental strategy were more likely to behave pro-environmentally. Interestingly, none of the top five most popular

organisations in the UK[2] (YouGov, 2020) have a position statement on sustainability available on their website.

This research included data collected from an NHS community trust that had engaged one quarter of all staff in their sustainable healthcare campaign. Perhaps by addressing wider communication streams and employing key narrators the levels of engagement could be enhanced. Communication must be embedded at all levels within an organisation, delivering a clear and uncomplicated message that appeals to altruistic values. The message needs to be delivered by multiple narrators from top-level boards of directors, through to line managers and team leaders (Corner, Shaw and Clarke, 2018). The message also needs to be cognisant of the situational constraints that exist for many staff working within highly structured clinical environments. Pro-environmental messages need to be promoting actions and behaviours that can be easily adopted within these restrictive working environments.

Actions

The applied research project identified that the VBN theory was successful in predicting small and inexpensive behaviour changes which according to Steg et al. (2005) are likely to be more successful than expensive or large changes. While the applied research focused on behaviours at home, the findings may be useful for sustainable healthcare campaigns, whereby messages need to convey behaviours that are small and inexpensive which Peeters et al., (2019, p. 427) describe as the 'low hanging fruit'. There is evidence to suggest that by promoting pro-environmental behaviours at home there is potential for spillover to a workplace setting (Nash et

[2] 1, British Heart Foundation; 2, Macmillan; 3, St John's Ambulance; 4, Cancer Research; 5, Great Ormond Street Hospital.

al., 2019). While these ‘quick wins’ are attractive it is also important to examine behaviours that are harder (in terms of time or effort) to adopt within the workplace.

The report for professional practice examined some behaviours that were recommended by the community NHS campaign. Some of the behaviours recommended have already become normalised within UK society, such as recycling and reusable shopping bags, and as a result some aspects of the campaign lacked contemporaneity (Thomas and Sharp, 2013). In the past 10 years there have been several wide-spread pro-environmental behaviours that have illustrated that small behaviour changes, when adopted by the masses, can be extremely powerful (Moore and Boldero, 2017), and that behaviours can become normalised in a relatively short space of time (Thomas and Sharp, 2013).

UK healthcare staff are a highly adaptable group of people. This is evidenced through the constant changes implemented and the ability of staff to respond to those changes (Brennan, 2017). As many pro-environmental behaviours are already becoming normalised, it is important to maintain momentum and to consider the ‘tipping points’ to normalisation of behaviours (Clayton et al., 2016 p. 206). There is a need for research that identifies the next ‘set’ of pro-environmental behaviours, things that are still small and inexpensive but also things that encourage people to move beyond the normalised behaviours. Organisations then have a duty to enact these pro-environmental behaviours at all levels, creating a culture that leads by example (Lamm et al., 2015).

Engagement and Accountability

This portfolio acknowledges the importance of addressing contextual barriers and situational constraints within healthcare. While organisations work to address these barriers in all aspects of business (NHS England and NHS Improvement, 2020) it is important that staff are continually engaged in a parallel process. All parts of this portfolio have indicated that greater emphasis on individual accountability is needed to mitigate the effects of climate change which is commensurate with the concepts presented within the *human interdependence paradigm* (Gärling, Biel and Gustafsson, 2002). The small-scale research presented the views of participants who felt that everyone should take responsibility for their own actions on climate change. Engagement of individuals is needed across society and across the different value orientations. Reliance on the good will of individuals works to a point but it is likely this will only ever have a limited success. As a result, research is needed to explore creative methods of engagement that test a few different approaches, such as a reward or incentive schemes (Tang et al., 2018), or a process of *greening* job descriptions (Saeed et al., 2019) to integrate a level of personal accountability to each job role.

Research exploring rewards and incentives for pro-environmental behaviour has produced inconclusive results (Haque, 2017), with some documenting long-term positive results and others suggesting the method is flawed. Those in favour see an incentive or reward to get people engaged in the hope that behaviour becomes normalised over time (Thomas and Sharp, 2013). In opposition, Hicklenton, Hine and Loi (2019) suggest that irrespective of the type of reward, employee motivation will typically only last if the reward scheme is in place. Clayton et al. (2016) caution that incentives can undermine the intrinsic motivation to act. However, this type of positive conditioning may be the only thing that appeals to the egoistic value orientation where no intrinsic motivation exists. Hicklenton, Hine and Loi (2019) suggest that to maximise success rewards

should be coupled with an educational message explaining the benefits in a hope that an intrinsic sense of motivation may develop through greater education and understanding.

Greening of job descriptions and creating the correct work environment is another means of engaging staff who may not consider climate change to be a focal priority. Hicklenton, Hine and Loi (2019) explore the *work climate* which they describe as the tangible side of policies and procedures that are seen and experienced by employees. They suggest that for corporate sustainability to be successful and meaningful organisations need to create the right conditions for engaging with pro-environmental behaviours. One possible way to achieve this is to set green performance indicators for all staff to achieve (Tang et al., 2018) which are reviewed in the annual appraisal process. Saeed et al. (2019) also recommend green recruitment and selection along with green training for all employees. Greening of human resource management (HRM) is a way to embed engagement and accountability into all job roles across and organisation (Haque, 2017). Pham, Tucková and Phan (2019) found positive correlation between greening of HRM through training, reward and culture, and pro-environmental employee behaviours.

Recommendations

Further research is needed within this field and there is a growing sense of urgency for healthcare to adopt more sustainable and pro-environmental processes (NHS England and NHS Improvement, 2020). As Stern (2011) recommends, environmental psychology research should be inter-disciplinary embracing existing literature from different fields. More organisational research is needed which uses trusted conceptual frameworks such as the *human interdependence paradigm* (Gärling, Biel and Gustafsson, 2002) and which addresses all four stages of Stokol's (1978) *forms of human transaction with the environmen*t. Clayton et al. (2016) recommend that research should be contextualised, examining the *person-in-place* and fostering a local understanding of issues. They suggest that decontextualized psychological research may perpetuate a sense of distance or ambiguity or abstractness to topics such as climate change. Research needs to be published and shared within the academic and professional fields to address some of the theoretical gaps in knowledge.

A key theoretical recommendation is in relation to the VBN theory which did not demonstrate the predictive power and confidence for more significant pro-environmental behaviours. Therefore, there is a need for a tool or instrument to predict behaviour changes that are more complex or costly in terms of time, energy and mental capacity. Further research is needed to establish if the problem is with the VBN theory as a whole or the tools or instruments used, and if the VBN theory can adequately capture the complexity and wider contextual elements of this topic.

Five key practical recommendations relate to research which facilitates further knowledge of: an understanding of employee's existing values and behaviours; effective delivery of pro-environmental messages by key narrators; the next set of pro-environmental behaviours which are achievable yet contemporary; different human resource strategies for greening jobs and raising personal accountability; and exploratory work to examine the transfer of pro-environmental values and behaviours between home and work.

Limitations

The literature review initially focussed on nursing specific research. Due to the scarcity of published material the review included other healthcare disciplines. While most articles included nurses the deviation from original inclusion and exclusion criteria without adjusting the search terms is a limiting factor. By keeping the narrow search focussed on nurses and nursing, and not adjusting and expanding to other healthcare professionals the literature review is limited. While the literature review does contain a range of other healthcare professionals (for example public health registrars, physiotherapists, occupational therapists) the search was not purposefully constructed to include these professions. As a result, caution should be applied to these findings in relation to other professional groups. In hindsight, it would have been more appropriate to focus on all healthcare professionals as this would have widened the pool of literature available and provided a more detailed oversight. In addition, many studies were conducted outside of the UK and it is important to recognise the cultural and organisational differences between countries.

The limitations of the small-scale research project and the report for professional practice were the small samples sizes for both stages. The results provide a useful insight but cannot be generalised to all healthcare settings. In addition, the issue of self-selection bias for the small-scale and the applied research project is a risk as the findings may represent only those who are interested in the topic of climate change and sustainable healthcare. In addition, the lack of inclusion of estates and infrastructure staff was a limitation as this research did not gain the perspectives of people involved with the structural and contextual constraints.

The limitations of the applied research project were the decision to focus on personal behaviours at home. This decision was led by the sustainable healthcare campaign's focus to encourage small behaviours changes at home with the hope that behavioural spillover occurred between home and work. Any findings can only be applied to NHS staff within a personal home setting and therefore this research has limited transferability to a workplace setting. Further research is needed to examine if behaviours at home do indeed spillover to a workplace setting.

All the research stages within this portfolio used self-reporting data. The use of self-reporting data when it comes to behaviours has its limitations as there is potential for the misrepresentation of the truth (Kormos and Gifford, 2014). This can be due to poor memory recall, an overestimation or underestimation of engagement with pro-environmental behaviours or attempts to offer socially desirable answers (Vesley and Klöckner, 2020). The collection of self-reporting data has many benefits including the flexibility and ease of data collection along with the ability to gather data on things that would be otherwise unobservable (Kormos and Gifford, 2014). Future research may address these limitations by utilising observational methods of data collection within the workplace to gather data that is more reflective of actual behaviour, however Abernethy (2015) points out that neither self-reported data nor observational data are perfect and a variety of data collection methods should be deployed to achieve triangulation.

This portfolio has attempted to illustrate the importance of situational constraints and contextual barriers and the impact that these have on pro-environmental behaviour both at home and at work. While the focus of this research was on the psychological perspectives it is important to acknowledge the need for further research to understand some of the tangible barriers that affect pro-environmental behaviour.

Reflexivity / Personal Reflection

Laudel and Gläser (2008) found that researchers form a 'research trail' as they iteratively extend their knowledge base by building upon previous research experience. In line with this one of my objectives was to develop my own skills as a researcher. It would have been easy for me to select a methodology that fell within my existing scope of practice. I had completed a few qualitative research studies before, for both scholarly purposes and as part of my job, therefore the qualitative aspect was known and safe. Despite this I wanted to extend my skills into quantitative research to improve my overall knowledge as a researcher. This posed a significant challenge for me as I had to overcome some pre-existing judgements about basic mathematics and statistics that I had formed in previous education programmes (Keeley, Zayac and Correia, 2008).

It was useful to have a supervisor with a quantitative research background as she was able to share the merits of quantitative research and how it could supplement and diversify the overall portfolio (Teddlie and Tashakkori, 2010). The applied research project used mediation analysis and posed the biggest personal challenge for me during this research. It was at this point that I experienced a state of optimal anxiety (Yerkes and Dodson 1907 cited in Keeley, Kayac and Correia, 2008), or more commonly known as stepping out of my *comfort zone.*

I was fortunate to have the support of a statistician during the applied research project and it was during this time I had to learn the statistics while also working with live project data. According to *Bloom's taxonomy of learning* (Bloom, 1956) in an ideal world the principles of statistics would be taught and learned first, allowing the student time to process the knowledge and comprehension before undertaking the more advanced analysis and synthesis. Therefore, this

represented the greatest challenge as I grappled with experiential learning (Kolb, 2000) with complex statistics while trying to make sense of my own data. As I embraced feeling comfortable with the uncomfortable and the intellectual challenge (Wellington et al., 2005), it was also extremely liberating.

In amongst the confusion there were moments of clarity and as time went by, I began to have to confidence to make decisions based on the data that I was seeing. There was a breakthrough moment in June 2019 when I documented in my reflective journal that I felt lost and frustrated, I was searching for support and guidance and answers from others. I was procrastinating which is a known self-sabotaging behaviour (Kearns, Gardiner and Marshall, 2007) and I had become stuck in the role of the apprentice which Dalton, Thompson and Price (1977) describes as someone working under the direction of others.

I needed to decide about the data and have the confidence and conviction to stand by my decision. I tried to use my logic to interpret the regression analyses and decide which items should go forward for the final stage of mediation. I was conscious of my own incompetence and desperate not to make a poor judgement but at the same time I had to decide based on the knowledge I had at the time. As stressful as it was I needed to keep progressing with the analyses and accepted that if my decision was incorrect then it would be a valuable learning experience. Laudel and Gläser (2008) describe this phenomenon as the shift from dependence to independence, which they describe as an inevitable transition for all early career researchers to go through.

Once this transition occurred I experienced a marked change in confidence and self-esteem, and it was at this point I felt ownership over the applied research project. I can reflect on this process in hindsight and see that my supervisors were trying to encourage autonomous behaviour which according to van Rooij, Fokkens-Bruinsma and Jansen (2019) is a marker of enhanced

research satisfaction and higher levels of self-efficacy. Johnson, Lee and Green (2000, p. 4) cite the work of Emmanuel Kant: “the enlightenment required man to emerge from his own self-incurred immaturity. Maturity for man consisted of having the courage to use his own understanding without the guidance of another”.

Conclusion

This research has sought to fill a gap in knowledge within the field of environmental psychology and sustainable healthcare in the UK. It makes an important contribution to our understanding of the psychological perspectives towards climate change and sustainable healthcare from which, it is hoped, that future researchers can build upon. The research provides a much-needed baseline of knowledge which has illuminated how psychological processes form barriers to engagement. It has allowed the first glimpse into the role that values could play in assisting our understanding of engagement, non-engagement and disengagement. In addition, the research has demonstrated that the VBN theory has predictive powers when it comes to small behaviour changes.

The key findings of this research suggest that success of sustainable healthcare is largely dependent on the people who work within the sector (Lamm, Tosti-Kharas and King 2015). At present there are many situational constraints and contextual barriers as well as psychological barriers that need to be researched and understood. To achieve individual engagement with climate change and sustainable healthcare this research recommends several practical steps. It is important that organisations understand the values, beliefs, norms and existing behaviours of their staff. Organisations should engage with staff not only the development of sustainable healthcare campaigns but also in the promotion of campaigns. Pro-environmental behaviours need to be tailored to the individual and the workplace and cognisant of occupational constraints, they must be contemporary and updated on a regular basis. Finally, reliance on good will alone is not enough to engage all staff therefore greening of human resources from recruitment, through to training and performance appraisals is needed.

Everard and Reed (2016) highlight the complexity of modern society and the need to adopt of range of strategies to tackle climate change. Clayton et al. (2016) proffer that psychologists are ideally situated to assist in adaptation and mitigation strategies, with a plethora of theoretical frameworks, theories and models that assist understanding of human behaviour. Reliance on global governments, corporations and organisations to mitigate climate change is not enough. Sustainability needs to be embedded at all levels within an organisation via a robust strategy allowing individuals to be accountable without the constraints or barriers (Lamm et al., 2015).

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Appendix 17: Publication in British Journal of Healthcare Assistants

The impact of healthcare on global warming and human health: connecting the dots

Chloe Griggs, Senior Lecturer, Centre for Work-Based Learning and Continuing Development, **Ana Fernandez,** Senior Lecturer, School of Psychology, Politics and Sociology, **Margie Callanan,** Director of Salomons Centre for Applied Psychology, School of Psychology, Politics and Sociology, all at Canterbury Christ Church University, Canterbury

Abstract

The aim of this paper is to explore climate change and the impact that this is having on human health. The paper takes the reader through a brief history of climate change, making links between rising global temperatures and the environmental effects that are being seen across the globe. The environmental effects are then explored in relation to human health and the impact that climate change is having on physical and mental health. The paper concludes by illuminating the carbon footprint of health and care in the UK and the role of the healthcare assistant and assistant practitioner in making a positive contribution to sustainable healthcare.

Key words

- Global warming
- Climate change
- Carbon footprint of healthcare

In 1896, according to Costello et al (2009), the scientist Svante Arrhenius predicted that carbon dioxide (CO_2) produced by human industry could raise the average temperature of the earth's atmosphere. It was not until the late 1980s, however, that this concept of global warming was introduced by the Intergovernmental Panel on Climate Change (IPCC) (2014) via the media. The IPCC found that greenhouse gases (GHG), mainly CO_2, created as a result of human industry, were being released into the atmosphere, trapping heat from the sun, increasing global temperatures and named it the 'greenhouse' effect. The rise in temperature around the time of the industrial revolution suggested a strong correlation between human activity and changes to the earth's atmosphere and this is known today as anthropogenic global warming (AGW) (IPCC, 2014).

> "Despite the carbon reduction in the NHS, it continues to contribute significantly to overall UK emissions and is contributing to ill-health as a result."

Climate change

AGW is a result of rising populations and the economic activity associated with supporting that population (Luthi et al, 2008). Selby and Kagawa (2010) highlight that in the globalised world there is an expectation that consumerism-fuelled growth can continue indefinitely, despite the finite resources available on earth. This concept poses two serious points for consideration: the first being that consumerism at the present rate is wholly unsustainable, the second issue is the harm that is being caused in the production of GHGs (Akenji, 2014).

Climate change on a global scale can be an overwhelming concept to contemplate, therefore consider for a moment the amount of waste generated within your own clinical area every day, from disposable equipment, to paper cups, to electricity. Have you ever thought about how those products are made, where they are made and where they go once placed in the bin?

Global temperatures have already risen by 0.2° C per decade since the start of the industrial revolution and Watts et al (2015) predict that by 2100 global temperatures will rise anywhere between 2.6° C to 4.8° C, resulting in a complex chain of events.

Extreme heat in equatorial regions

In equatorial regions, this has caused a loss of crops, infertile soil ultimately leading to mass migration away from these arid regions (Hansen et al, 2006). The loss of crops has a significant impact on global food supply, placing an additional strain on those areas that continue to produce. Food scarcity in equatorial regions is becoming a major economic concern; for example, those living in rural Iran are facing forced migration, which places a strain on urban areas as people search for food/water, work and a better quality of life (Keshavarz, 2013).

Rising sea levels

The rise in global temperature has melted Artic ice fields at a rate of 50000km² per year (McMillan et al, 2014) and glacial recession has been observed in the Himalaya (Racoviteanu et al, 2013) and Antarctica (Holland et al, 2015). One effect of this has been a mean rise in sea levels by 0.19m (IPCC, 2014), which has already been devastating to low-lying populated areas, such as the South Pacific. Of the 20 Solomon Islands studied by Albert et al (2016), five vegetated islands were lost between 1947 and 2014, due to rising sea levels.

Several villages were affected by coastal erosion and rising sea levels and while a majority of inhabitants relocated, some disadvantaged families had to build temporary homes, increasing their vulnerability to storm or wave events (Albert et al, 2016).

Storm surge and flooding

The risk of storm and wave events in the future within the US is significant: it is estimated that somewhere in the region of 3.7 million people are living within one metre of the present high-tide mark (Rahmstorf, 2012), indicating that even the smallest rise in sea levels could lead to significant displacement of costal populations.

Within the Netherlands, despite advanced flood-abatement systems (dykes and beach replenishment), rising sea levels pose a threat to ecosystems, health, coastal populations and economics (Gupta et al, 2004). In contrast, Bangladesh has limited infrastructure to deal with flooding and Brouwer et al (2007) found that floodplain residents have neither the financial means nor knowledge to protect themselves from flooding, strengthening the connection between environmental risk, poverty and vulnerability.

Unforeseen events

The effects of AGW are not limited to a simple rise in temperature and sea levels. A number of adverse events are occurring that have not been predicted. For example, as glacial ice has melted, it has released GHGs that have been trapped in the permafrost for hundreds of thousands of years. One instance of this is in West Siberia, where frozen peat bogs contain 70 billion cubic tonnes of methane; if the gas is released, it will represent 16% of all anthropogenic GHG emissions from the past 150 years (Sheng et al, 2004). In addition, oceanic uptake of CO_2 has led to a 25% increase in acidity and a reduction in oxygen levels in sea water, resulting in changes to marine ecology (IPCC, 2014). Plus, deforestation fuelled by global consumer demand is simultaneously reducing the amount of CO_2 removed from the atmosphere by trees.

All of the climate changes linked to AGW witnessed to date and forecast for the future have devastating effects on

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Chlorofluorocarbons (CFCs), used in the manufacture of aerosol sprays etc, thin the ozone layer that protects earth from the sun, leading to cases of skin cancer doubling since the 1980s.

physical human health and psychological wellbeing (IPCC, 2014). Therefore, the next section seeks to explore some of the effects of AGW on human health and wellbeing. Examples are drawn from across the globe to illustrate the connection between AGW and the impact on the developed western world.

Global warming and impact on human health

AGW is projected to have a significant impact on human health, exacerbating the ill-health that already exists, but also increasing the susceptibility to ill-health among vulnerable populations in developing countries (IPCC, 2014). According to Watts et al (2015), the potential ramifications of global warming for human health could be catastrophic; they suggest tackling this issue is a priority for the 7 billion inhabitants of earth. The World Health Organisation (WHO) (2015) predicts that up to 250 000 additional deaths will be associated with global warming between 2030 and 2050. The health outcomes of global warming are likely to have the most significant effect on the developing countries, where health infrastructure is weak; however, developed countries will not go unscathed.

Immediate and direct risks are associated with the changing climate and the increase in severe adverse weather (McMichael et al, 2012). In 2003, Europe experienced a heatwave that resulted in extreme loss of life. The death toll in France alone was 14 800 people during a 9-day period. The loss of life was predominantly among the elderly and those with pre-existing health conditions; however, there was a worrying proportion of deaths among 45-55 year-olds (Bouchama, 2004).

Some risks associated with AGW are far removed from comfortable 'Western' living, and Lorenzoni et al (2007) describe the UK public perception that the effects of AGW are a distant threat removed by space and time. This notion is supported by Moser and Dilling (2004), who illustrate the geographical separation of those living in countries that generate the most GHGs from those who live in developing countries most affected by the impacts. Selby and Kagawa (2010) suggest, therefore, that the UK population must make the connection

> "Climate change on a global scale can be an overwhelming concept to contemplate, therefore consider for a moment the amount of waste generated within your own clinical area every day, from disposable equipment, to paper cups, to electricity."

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The rise in global temperature has melted Arctic ice fields at a rate of 50 000km² per year.

Adobe Stock/Getty

The long-term effects of traumatic experiences such as flooding can have a lasting psychological impact.

between globalisation, consumerism and the impact this is having on faraway people and places: joining up the dots, in other words.

Heat and ozone

Within the UK, the health risks associated with AGW are well documented. Public Health England (PHE) (2015a) forecasts that heat-related deaths will increase in the summer months, with the south-east worst affected. The World Health Organisation (WHO, 2016) reports that cases of skin cancer have doubled since the 1980s, largely due to thinning of the ozone layer through use of ozone-depleting chemicals such as chlorofluorocarbons (known as CFCs), used in the manufacture of aerosol sprays, blowing agents for foams and packing materials, as solvents, and as refrigerants. In the northern hemisphere, this has allowed more ground-level ultraviolet radiation. In the UK, an average of 86% of skin cancer diagnoses made in 2010 were connected to over-exposure to ultraviolet radiation (Parkin et al, 2011).

According to the Committee on the Medical Effects of Air Pollution (Public Health England, 2015b), ground-level ozone is a growing problem within UK urban areas. Ground-level ozone is a pollutant that is formed by chemical reactions as a result of anthropogenic GHGs. The health effects of ground-level ozone have not been fully quantified, but there is evidence to suggest an adverse connection between ozone and respiratory morbidity and mortality (Jerrett et al, 2009).

Flooding and vector-borne disease

Despite the fact that flooding in 2007 claimed 13 lives in the UK, advances in flood defence technology and increased public awareness of the physical dangers of flooding mean that it is unlikely that this number will rise significantly, according to the Health Protection Agency (HPA) (2015). However, it is the presence of static water (flooded fields, basements) that poses a new risk, associated with mosquitoes and vector-borne disease (HPA, 2015). An example of this is dengue fever, the most prevalent mosquito-borne disease worldwide, claiming 12 000 lives a year (Bouzid et al, 2014). Extreme weather events in the UK and rising temperatures mean the prevalence of these diseases (typically only ever seen in warmer climes) is set to increase here.

Psychological impact

Much of the literature discussed so far focuses on climate change and the threat to physical health. Stanke et al (2012) document the lasting health effects of climate change, with particular focus on mental health problems. They studied the long-term effects of traumatic experiences such as flooding and the lasting psychological impact, which can lead to substance misuse. They suggest that there is a connection between poor mental health and maladaptive coping strategies, resulting in a detrimental impact on resilience and recovery.

Global policy

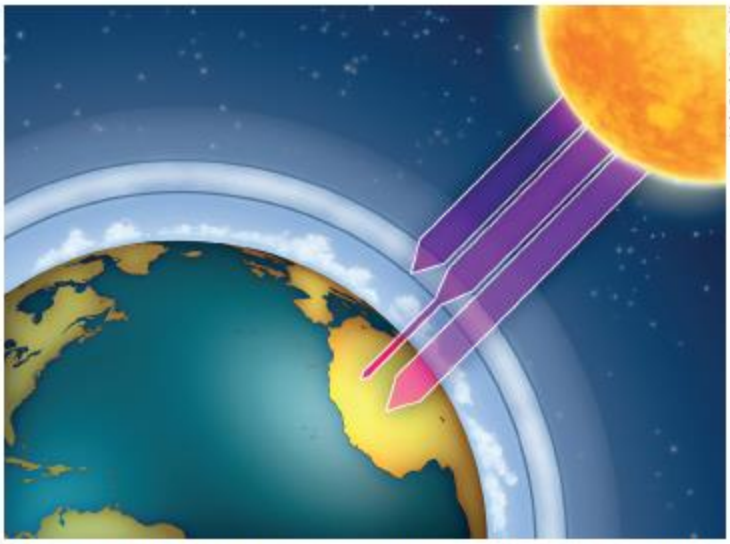
As a result of the health impacts, there are a number of ambitious targets in the 2008 Climate Change Act to reduce 80% of carbon emissions in the UK

by 2050 (Department for Energy and Climate Change, 2008). This ambitious target was supported by the COP21 Paris Agreement (European Commission, 2016), which was the first ever legally binding climate deal, agreed by 195 countries. The Paris Agreement had a number of key features, which include the need: to limit global warming to less than 2oC of pre-industrial levels; to reach the peak of global GHG emissions as soon as possible and then start reducing (known as global peaking); to agree new targets every five years; and for governments to facilitate mitigation and adaption to ensure individuals have the necessary skills to cope with climate change. Despite the recent announcement that the US is withdrawing from the Paris Agreement (McCarthy, 2017), there remains global buy-in, and as time goes on, more single states in the US may follow Hawaii and pledge their commitment (James, 2017).

NHS carbon-footprint

The National Health Service (NHS) is one of the largest organisations in the UK, employing more than 1.3 million staff (NHS Confederation, 2016) and it is unsurprising that it is the biggest emitter of GHGs. Figures estimate an annual production of 22.8 million tonnes of CO_2, according to the NHS's Sustainable Development Unit (SDU) (2015). GHG emissions within the NHS are connected to a number of different activities, such as procurement, building energy use, and travel (SDU, 2012).

In response to this growing carbon footprint of the UK's healthcare sector, NHS England and Public Health England created the SDU in 2008. The unit supports healthcare, public health and social care organisations to achieve sustainability from an environmental, social and financial perspective (SDU, 2016). The SDU has created guidance documents on, for example, how to cut down on paper usage. It has also provided toolkits, for example, the Health Outcomes Travel Tool, which helps NHS organisations to measure the impact that their travel has on the local environment. However, the SDU is only able to make recommendations and provide guidance; at present, its guidance is not policy and there are no penalties for non engagement with it.



The ozone layer or shield is a region of the stratosphere that absorbs most of the Sun's ultraviolet (UV) rays.

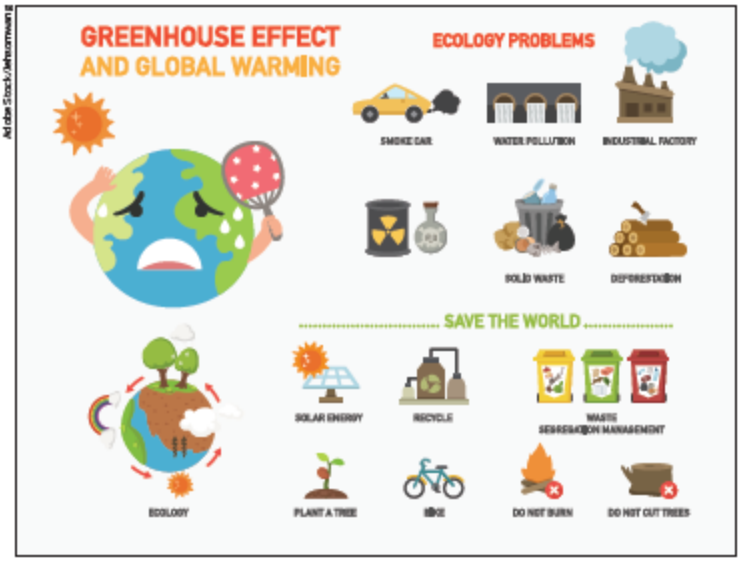
The SDU performs an annual 'Health Check' to assess and monitor carbon-reduction programmes, whereby it promotes examples of best practice from around the UK.

For example, York NHS and York City Council have been working to create healthier travel options and improve air quality, promoting cycling, car-sharing and electric vehicles.

A collaboration between University Hospitals North Midlands, Southern Staffordshire Community Energy and Staffordshire fuel poverty charity, Beat the Cold, has been successful in raising money to install 1000 solar panels on hospital roofs. This means cheaper energy for the trust and the surplus is used to help combat fuel poverty (SDU, 2017). Through excellent initiatives such as this, the NHS has managed to reduce its carbon emissions by 11%. This is a great success, when considering the UK population has grown by 8 million since 1990, according to the Office for National Statistics (ONS) (2016); and the growth has led to an 18% increase in NHS activity between 2007 and 2016 (NHS England, 2016).

Despite this reduction in CO_2, much more work is needed and this will involve all staff at all levels. Healthcare assistants (HCAs) and assistant practitioners (APs) are involved in a significant amount of frontline care and are well placed to consider their own environment and ways of working. According to the SDU (2010), HCAs and APs can take 5 simple steps to becoming more involved in sustainable healthcare:

- Understand the basic facts: everyone has a duty to engage with this topic. This is not just about reducing carbon emissions, but also about making the NHS a more efficient service that will last for future generations
- Move and communicate better: promoting the use of healthy transport options to not only keep ourselves fit and well, but to also improve air quality. Plus, the use of technology (web conferencing, telephone consultations etc) to reduce unnecessary traffic associated with health care
- Eat and drink better: promoting the wellbeing of staff, ensuring regular breaks and a healthy diet. In addition, you can lobby your local trust to buy locally sourced and prepared food and the supply of water fountains and reusable bottles to reduce plastic waste
- Buy, procure, commission, use better: HCAs and APs can influence ethical procurement and actively participate in the promotion of:
  1) use less, 2) reuse, 3) recycle
- Develop better models of care: HCAs and APs are well positioned to work with patients and service users to



Adobe Stock/Jehsomsak

Ecological problems—and some potential solutions.

promote health, reduce duplication and waste, and to promote patient safety

Conclusion

Despite the carbon reduction in the NHS, it continues to contribute significantly to overall UK emissions and is contributing to ill-health as a result. It is likely that without extreme mitigation there will be serious and irreversible effects of global warming on humans and ecosystems (IPCC, 2014). Therefore, it is necessary for all governments, organisations, communities and individuals to recognise the need for collective and immediate action.

As frontline staff, healthcare assistants and assistant practitioners have the ability to influence this agenda by making small changes to their practice. These changes could include: switching equipment off; promoting recycling; promoting responsible use of resources; and, looking after the human resources (each other).

Small cumulative actions by every individual connect up to a significant overall impact. BJHCA

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Reflective questions for your continuing professional development

- How much waste is generated within your own clinical/work area every day?
- Reflect with a colleague on what your team could do to reduce waste in your clinical/work area.
- Describe three ways how you as an HCA/AP could be more involved in sustainable healthcare

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"The long-term effects of traumatic experiences such as flooding can have a lasting psychological impact"

Appendix 18: Publication in the British Journal of Nursing

Nursing and the barriers to sustainable health care: a literature review

Chloe Griggs, Ana Fernandez and Margie Callanan

ABSTRACT

Objectives: global warming poses a serious threat to human health, yet healthcare organisations and staff have been relatively slow to engage with sustainable healthcare practices. This review of the literature seeks to frame what is already known about nurses and their views on global warming and sustainable health care. Design: 11 primary research articles were sourced from a search of five mainstream databases. These articles were subject to a basic thematic analysis. Results: six themes were identified: sustainability, endemic blindness to global issues, environmental numbness, social norms, priority assigned to sustainability, and psychology of responsibility and blame. Conclusion: from the literature reviewed, there are a number of social, cultural and psychological barriers that have led to widespread inaction. This article recommends further research to understand the psychological barriers in more depth as this is a poorly understood area.

Key words: Global warming ■ Literature review ■ Nursing ■ Sustainable health care

According to Watts et al (2015) the potential ramifications of global warming for human health could be catastrophic, with up to 250 000 additional deaths associated with global warming between 2030 and 2050. Tackling global warming is now a priority for the 9 billion inhabitants of earth (United Nations (UN) estimates 7.6 billion in June 2017 (UN, 2017)). Despite the development of the 17 UN Sustainable Development Goals (UN, 2015), and, the COP21 Paris Agreement (European Commission, 2016), which was the first ever legally binding climate deal agreed by 195 countries, action on climate change remains slow. The Intergovernmental Panel on Climate Change (IPCC) (2017) warns that, without extreme mitigation, there will be irreversible effects on humans and ecosystems, therefore it is necessary for all governments, organisations and individuals to recognise the need for collective action.

Chloe Griggs, Senior Lecturer, Centre for Work-Based Learning and Continuing Development, Canterbury Christ Church University, chloe.griggs@canterbury.ac.uk

Ana Fernandez, Senior Lecturer, School of Psychology, Politics and Sociology, Canterbury Christ Church University

Margie Callanan, Director of Salomons Centre for Applied Psychology, School of Psychology, Politics and Sociology, Canterbury Christ Church University

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Owing to the scale of health care within the UK it is unsurprising that the NHS has an annual production of 22.8 million tonnes of carbon dioxide (Sustainable Development Unit, 2015). Emissions are attributed to activities such as procurement, building energy use and travel (Sustainable Development Unit, 2015). The NHS contributes significantly to overall UK emissions and, paradoxically, is contributing to ill health. Within global health care, the nursing workforce accounts for a significant subset of the population, and it is recognised that the 285 893 nurses and health visitors in 2017 (NHS Confederation, 2017) are in a strong position to influence sustainable practice. Despite the size of the nursing population there is little empirical research exploring nurses' perceptions of global warming; therefore, this article seeks to summarise existing literature to frame nurses' and other frontline health professionals' perceptions of global warming.

Design

The search process began with mind-mapping a number of key words and sequences. Various combinations were tested within Google and also within a randomly selected database (British Nursing Index). This exploration of key words, truncations and Boolean operators was practised to ensure that the final key words and their sequence were appropriate and produced maximum results. Three sequences were selected: Nurs* AND climate change OR global warming; Nurs* AND sustainab*; Environmental Sustainability AND Health.

Four databases were selected for this literature review: the Cumulative Index to Nursing and Allied Health Literature (CINAHL); British Nursing Index (BNI); Applied Social Sciences Index and Abstracts (ASSIA) and Medline. Most search sequences initially returned a high volume of results, therefore filters such as 'title only' and 'peer reviewed articles' were applied. Once filters were applied, a manual search of titles was performed; this exercise was extremely useful and allowed the inclusion and exclusion criteria to be applied (*Table 1*). Reasons for exclusion were as follows: lack of relevance, duplicates, alternative use of the word 'climate', and sustainability pertaining to survival of new initiatives/service development. It quickly became apparent that there was a lack of primary research exclusively examining nurses, therefore the inclusion criteria were expanded to studies that included nurses and other health professionals.

Table 1. Inclusion and exclusion criteria

Inclusion	Exclusion
■ Primary research (quantitative, qualitative and mixed-method research) ■ Theoretical research (concept analyses and systematic reviews) ■ English language ■ Peer-reviewed journal articles ■ Non-nursing professionals	■ Narratives/commentaries ■ Non-English language ■ Non-peer reviewed/unpublished ■ Research evaluating services/initiatives ■ All articles that refer to a 'climate of change'

During the initial scanning of the titles, 31 articles were referred to the next stage, which involved reading the abstracts. It then became apparent that many of the articles were not research papers, but were professional practice papers, general articles, special features, articles about continuing professional development, or editorials and 19 were excluded on this basis. These articles did, however, provide useful insight and were set aside for supplementary use. This resulted in 12 articles selected for inclusion within this literature review: four qualitative, three quantitative, one mixed method, three concept analyses and one systematic review.

The four qualitative articles included within the literature review were critically assessed using the Critical Appraisal Skills Programme (CASP) qualitative checklist (CASP, 2013). The checklist is designed to assist researchers to make sense of evidence and to select the most credible qualitative studies, which is an essential stage of any systematic review (Aveyard, 2010). A scoring system was implemented to ensure a transparent approach to quality and rigour. As a result of the critical appraisal process, one article was excluded because of a lack of methodological detail. Each of the 11 articles selected was read initially to check content and suitability; the articles were then re-read to allow themes to emerge. These were colour coded and the prevalence of themes within each article can be seen in *Table 2*.

Results

The literature review identified six key themes:

- Historically, the word 'sustainability' was associated with money and service longevity. Although an emerging focus on ecology is documented within the nursing literature, there is still confusion as linguistic camouflage hides the true meaning (Anåker and Elf, 2014). This is language that can conceal the unpleasant or harmful realities of the subject by using metaphors (carbon footprint) or oxymorons (sustainable development).
- There was a strong sense of disconnect between local actions and global consequences, with many health professionals demonstrating a moral disengagement with the effects of anthropogenic (man-made) global warming (AGW) on developing countries (Grootjans and Newman, 2013)
- Many psychological barriers to action were identified, including cognitive dissonance, denial, fatalism and the bystander effect (Dunphy, 2014)
- There was a strong correlation between the desire to be socially accepted and the widespread silence on the topic, with the fear of being ostracised or of raising a politically emotive topic cited as a major barrier to engagement (Polivka et al, 2012)
- The level of priority assigned by healthcare staff to sustainable health care suggested that, owing to the emotional demands of the job, staff perceived that they had little emotional resilience left for environmental issues (Dunphy, 2013)
- Individual and social barriers were associated with an externalisation of blame, with lack of leadership, the inaction of others and self-exoneration all cited as reasons for a lack of engagement (Anåker et al, 2015).

Sustainability

When examining definitions of sustainability Anåker and Elf (2014) identified two socially acceptable usages. The first traditional meaning pertains to something surviving over a long period. The more modern definition is of something that survives over a period of time while promoting ecological resilience. The modern definition of the word 'sustainability' is used within this article. Despite the modern definition, Dunphy (2013) suggested that 'sustainability' is ill defined within health care and McMillan (2014) recognised the ambiguity and lack of clarity may stifle the ability of nurses to engage with sustainable health care.

This ambiguity has led to a number of concept analyses, each seeking to define sustainability within nursing. Grootjans and Newman (2013) offered a framework for sustainable nursing knowledge including: ecology of health, thinking globally, and health promotion, encouraging nurses to act locally and think globally. Owing to the complexity of sustainability McMillan (2014) was unable to clarify the concept. Anåker and Elf (2014) provided the most coherent definition to date and suggested that:

> **'The concept of sustainability in nursing can be defined from a core of knowledge in which ecology, global and holistic, comprise the foundation. The use of the concept of sustainability includes environmental considerations at all levels. The implementation of sustainability will contribute to a development that maintains an environment that does not harm current and future generations' opportunities for good health.'**
>
> ***Anåker and Elf, 2014: 387***

There is a call for shared language across the sector and beyond (Dunphy, 2013). The language chosen must safeguard the balance between economic and ecological sustainability, and recognise the position of nurses to influence change.

Disconnect: endemic blindness to global issues

The nurse of the future is one who can make links between local actions and global consequences, proactively contributing to sustainable health care (Goodman, 2011). Therefore, the challenge presented to health professionals is to develop global thinking at all levels (Kirk, 2002). Nurses have fought for social justice; however, paradoxically, despite a deep and meaningful interest in the welfare of the patient, there is little consideration for people beyond the immediate care context (Grootjans and Newman,

Table 2. Prevalence of themes in articles reviewed

Authors	Type of research	Themes					
		What does sustainability mean?	Endemic blindness to global issues	Environmental numbness leading to inaction	The power of social norms	Priority of sustainability for frontline staff: home versus work	Individual and social barriers/ psychology of responsibility and blame
Anaker and Elf (2014)	Concept analysis	X		X	X		
Anaker et al (2015)	Qualitative	X	X	X	X	X	X
Charlesworth (2012)	Mixed method		X	X	X	X	
Dunphy (2013)	Qualitative	X	X		X	X	X
Dunphy (2014)	Qualitative		X	X		X	
Grootjans and Newman (2013)	Concept analysis	X	X				
McMillan (2014)	Concept analysis	X	X			X	
Nichols and Richardson (2009)	Systematic review					X	X
Polivka et al (2012)	Quantitative		X	X	X		X
Richardson et al (2015)	Quantitative		X			X	
Richardson (2016)	Quantitative	X			X	X	

2013). Grootjans and Newman (2013) describe an 'endemic blindness' to global issues that is not associated with lack of care, but with a poor appreciation of the 'interconnectedness of our planet' and how local actions impact on global issues.

Anåker et al (2015) found Swedish nurses understood local environmental issues and made conscious decisions to prioritise the environment closest to their patient, for example; maintaining comfort, safety and hygiene. Consideration of global warming from a global perspective was not seen as important within care and emphasis was placed on environmental issues within the ward and hospital (Anåker et al, 2015). Kirk (2002) described this egocentric focus, suggesting that nursing models have focused on the immediate environment, neglecting global thinking. Despite an awareness of the importance of thinking globally, senior nurse academics felt the immediate care should come first, followed by the local care environment, with a global perspective remaining on the periphery of nursing (Kirk, 2002).

In contrast, nurses in the USA are more likely to consider global warming as a global issue (Polivka et al, 2012). Bandura (2007) explored the disconnection between local actions, global warming and the consequences for developing countries. He suggested that through a complex process of 'moral disengagement' individuals are overwhelmed by the comfort of modern living, which outweighs the remote effects of global warming (Bandura, 2007). He went on to explain that while standards of living are maintained, there is little motivation to question the impact of such lifestyles. Polivka et al (2012) found that 19% of nurses surveyed believed there were no health issues in the USA as a result of global warming; it is unclear if this was based on genuine ignorance or literal denial (Cohen, 2001).

In Australia, Dunphy (2014) found health professionals struggled to make connections between local actions and global implications, stemming from feelings such as disconnection and disempowerment. The implications of global warming for many developed countries presents issues so distant and removed in space and time that the perception of threat is minimal (Lorenzoni et al, 2007). There is an instinctual drive to focus on immediate issues that pose a threat to the individual, leading to passivity because of an inability to comprehend the abstract threat and an incapability to identify with those experiencing the plight of global warming (Cohen, 2001).

While there are no empirical research studies exploring nurses' perceptions of global warming within the UK, some examine sustainability in the NHS. For example, research by Charlesworth et al (2012) suggested systemic issues within the NHS perpetuate introspection and prevent global thinking. They described the reactivity of the NHS, responding to issues with short-term solutions. Dunphy (2014) suggested current healthcare systems have created target-driven cultures disconnected from values, which inhibit global thinking.

There is a growing need for nurses to understand the effects of global warming on their local community. Imagery containing far-removed ice caps and polar bears perpetuates the sense of distance (Bandura, 2007), and bombardment with shocking headlines leads to people evading and switching off to messages (Cohen, 2001). Therefore, contextualising global warming to local settings is imperative so that nurses understand the local impact (Lorenzoni et al, 2007). In addition to this, it is of increasing importance that nurses appreciate the impact global warming and consumerism are having on developing countries. There is also a need to translate this knowledge into more sustainable practices, which in light of current pressures on nurses poses a significant challenge.

Psychological barriers: environmental numbness

Individuals disempowered to change can appear indifferent to environmental problems (Dunphy, 2014), which can create a sense of 'environmental numbness'. This is known as implicatory denial whereby there is acceptance of reality but a denial of the impact of that reality (Cohen, 2001). Despite consensus among climate experts that global warming is a real threat, there is mainstream inaction and this ability to compartmentalise is a form of 'cognitive dissonance' (Festinger, 1962), whereby risk is separated from normal everyday values. Cognitive dissonance may be particularly relevant to nurses who are caring and compassionate yet participate in work that contributes to global warming, for example, the use of disposable plastic items and incineration of hazardous clinical waste. There are three means to resolving cognitive dissonance: attitude or behaviour change, internal exile (avoiding conscious thoughts), and the distortion of information (drawing on culturally approved denials). Changing attitudes and behaviour is the hardest, leaving internal exile and distortion of the truth as favourable options (Cohen, 2001).

Bandura (2007) discussed 'moral agency' whereby individuals apply a complex series of judgements and self-regulatory systems to the way they behave. Actions are governed by moral standards on a personal and societal level that serve as a guide to inform behaviour. However, Bandura (2007) described a series of mechanisms whereby moral standards can be selectively disengaged, for example, the so-called 'negative effect of caring' (such as carbon emissions) is cognitively reconstructed to become righteous and socially acceptable (to deliver an essential health service).

Anåker and Elf (2014:386) found that 'confidence in the future and willingness to change' were key elements of sustainable development, without which nurses have little hope of creating a sustainable profession. Lorenzoni et al (2007) found that a resignation to the irreversibility of global warming was a significant barrier to engagement and may link to passivity and learned helplessness (Moreland et al, 2015). Fatalism and resignation may be associated with the 'bystander effect' where the bystander may either ignore the situation, underestimate their responsibility to act or distort the seriousness of the situation (Latané and Darley, 1969).

Social norms

Professional identity in nursing is a complex social activity, strongly influenced by group behaviour, a sense of belonging and inter-group relationships (Willetts and Clarke, 2014). Traditional nursing models have sought to create a systematic approach to nursing, thus strengthening conformity to a professional identity; however, these models can be highly restrictive, creating a practitioner prone to compartmentalised thinking and leading to an unwillingness to think about sustainable health care. Dominant 'professional paradigms' may inhibit freedom of thought, moulding professionals to fit a certain group identity (Dunphy, 2014).

To align with professional paradigms, nurses may deploy 'emotional convergence', affiliating emotions and strengthening social bonds, ensuring a strong disciplinary identity (Dunphy, 2014). Nurses in the USA avoided topics around global warming owing to the subject's political controversy (Polivka et al, 2012), and Dunphy (2014) found health professionals avoided the topic of global warming because of the fear of ostracism, lack of understanding, experience and authority on the topic. Boswell et al (2005) described a pandemic nursing apathy towards politics, suppressing any actions deviating from social norms. Lorenzoni et al (2007) found the UK public perceived 'green living' as undesirable and labels such as 'weird' and 'hippy' were assigned. High-profile cases of ostracism include media depictions of Al Gore as the 'ozone man' and Prince Charles as the 'loony eccentric Prince who talks to plants', and such ostracism results in widespread silence on the subject (Bandura, 2007).

Charlesworth et al (2012) identified the notion of 'moral offset' as a barrier to action on global warming. Moral offset is the belief that the good associated with their professional lives cancels out their own carbon footprint. Therefore, it could be argued that nurses exercise moral offset towards global warming, which is justified because the 'good' that is done towards their patients overrides the harm that is done through health care (Anåker et al, 2015). Moral offset links to a sense of 'cultural denial' whereby a society slips into a collective state of denial (Cohen, 2001).

Priority assigned to sustainability

Anåker et al (2015) conducted a qualitative study of nurses' perceptions of climate change and found that within pressurised care settings environmental sensitivity was simply not a priority. Nurses described themselves as being 'reactive' to the patient's needs and primarily focused on saving lives (Anåker et al, 2015). Charlesworth et al (2012) found that, despite public health registrars' desire to incorporate sustainability into their day-to-day work, there was a lack of engagement. They drew conclusions much the same as Anåker et al (2015) and Dunphy (2013), citing time, the demands of the job and a reactive culture as factors that inhibit engagement.

Owing to the emotional and physical effort of caring, nurses often felt that they did not have the time or energy to consider environmental issues (Anåker et al, 2015). This is consistent with 'attentional resource theory,' which details the finite human capacity for attention, and the need to assign attention according to priority (Cohen, 2001). Mitchell (2013) suggested the success of any change is based on individuals' willingness and motivation to act as 'change agents', and stressful environments where staff are depleted of emotional resilience are not always

conducive to change. However, Jackson et al (2007) argued that, despite the stresses of contemporary health care, many nurses choose to remain and thrive within the job. If nurses have already demonstrated an ability to adjust to the hardship and emotional labour of caring, then the potential to positively adapt to environmental issues is promising and 'hardiness and resilience' can be learned (Jackson et al, 2007).

A lack of engagement with environmental sustainability at work is not always reflective of an individual's values at home; in Dunphy's (2014) Australian study it was apparent that participants took more environmental action at home than within their professional lives, often separating out their opinions/values according to the setting. Environmental behaviour was directly linked to the perceived ease of adopting that behaviour; for example, high engagement with minor lifestyle changes at home, but a reluctance towards major investment (time or money) (Dunphy, 2014).

Psychology of responsibility and blame

The final theme was around social barriers and the externalisation of responsibility for action on global warming. Dunphy (2013) found that one of the most basic barriers was the lack of visibility of environmental sustainability within Australian healthcare policy. Dunphy's (2013) study participants described the lack of strategic objectives and absence of explicit reference to environmental issues. This is of particular interest when reviewing the principles and values in the current NHS Constitution (Department of Health, 2015), which does not refer to the preservation of local or global environments and only refers to 'finite resources'. The vision goes on to explain that wasted resources means wasted opportunity for others, which does not capture the importance of environmental resources.

Although it is important that organisations have clear corporate plans on global warming, the absence of such plans could be a convenient excuse for nurses. This 'externalisation of responsibility' is present within the general population, and denial of personal responsibility and blaming large organisations and governments are commonplace according to Lorenzoni et al (2007). Milgram (1974) explored the concept of obedience and found that subordinates, for example nurses, will simply obey authority figures such as healthcare management. This self-exoneration occurs when individuals free themselves from any fault and attribute blame to others. McMillan (2014) stresses that the success of sustainability is dependent on stakeholders at all levels working towards shared goals, and if one organisational level disengages then change will not occur (Mitchell, 2013). Lorenzoni et al (2007) suggested that when certain individuals or organisations are disengaged a concept known as the 'free-rider effect' can inhibit the motivation of others. Therefore, within nursing there may be a widespread inaction that is self-perpetuating; the free-rider cycle needs to be broken in order to motivate individuals into action.

Discussion

The literature review identified confusion around the word sustainability, a disconnect between local and global actions and consequences, psychological barriers to action, social barriers to action, individual and collective barriers to action, and a conflict of priorities in care delivery with sustainable health care featuring as a low priority.

A limitation of this study is the lack of specific nursing research. This literature review has included research involving a range of healthcare disciplines, not just nurses, and those views may not be representative of the nursing profession (Charlesworth et al, 2012; Dunphy, 2013; 2014). In addition, many studies were conducted outside the UK and there is recognition that cultural and organisational differences may not be reflective of the UK healthcare setting. Therefore, further research is needed to understand the perceptions of nurses within the UK.

According to Muñoz (2012) nurses have a special contribution to make to mitigation of global warming as the largest group of healthcare staff, consuming vast amounts of resources and producing a vast amount of waste. Fitzpatrick (2010) recognises the significant impact that nurses could have over healthcare-associated global warming through influencing organisational development, procurement choices and responsible management of resources. Polivka et al (2012) suggested that a sense of professional responsibility towards global warming can be achieved through nurse education and also through continuing education for qualified staff. Richardson et al (2016) and Goodman (2011) have successfully placed environmental sustainability on the undergraduate nursing curriculum agenda but the education of qualified staff has received less attention and is a key research priority, according to Richardson et al (2015). In order for any future education for qualified nurses to be effective it is imperative to understand what nurses think about healthcare-associated global warming and environmental sustainability. Without such knowledge, educational initiatives and subsequent service changes may be futile as they fail to frame the subject appropriately.

Anåker and Elf (2014) identified the lack of literature available on sustainability within nursing and while Anåker et al (2015) offered a comprehensive qualitative exploration of nurses' perceptions of climate and environmental issues this was limited to Sweden and it is important to consider cultural differences and the application to a UK setting. From the literature reviewed it is clear that there are a number of reasons cited as to why nurses do not engage in environmentally sustainable behaviour, the most obvious physical barriers being time and lack of perceived level of priority within busy clinical areas. It is unlikely that these physical barriers will change significantly given the ever-increasing UK population and limited budgets. Therefore, it is important to understand the perceptual barriers in more depth as this is an aspect that may be changed. The literature revealed a series of irrational or maladaptive strategies that may be used to cope with the cognitive dissonance created by global warming, such as denial, personal exemption and social exemption. These psychological mechanisms or 'mental manoeuvres' can be seen as tactics to reduce the dissonance and create a state of cognitive consonance, and the outcome is widespread inaction towards healthcare-associated global warming.

One possible contribution to this widespread inaction is the lack of strategic direction and, to date, the support for

KEY POINTS

- Climate change is beginning to have serious and lasting effects on the health of the UK population
- There is a lack of research examining perceptions of climate change and sustainable health care in the UK
- The literature to date suggests that there are a range of physical and psychological barriers to engagement with sustainable health care
- Nurses represent a significant subset of the healthcare sector who could positively influence the sustainable healthcare movement

nurses to become more sustainable has been sporadic. The World Health Organization (WHO) (2017) has an extensive website making cogent links between the carbon footprint of health care and the impact on human health. The National Institute for Health and Care Excellence (NICE) (2017) has health protection guidance on topics such as air pollution and extreme weather, all of which include guidance for health professionals. In addition, the UK Health Alliance on Climate Change (2016), consisting of 15 professional bodies including the Royal College of Nursing and the British Medical Association, produced a report identifying six key steps to tackling climate change, one of which was around the role of health professionals taking local action. The influence of all of these organisations in practice, in the real world, is questionable, and these actions may have little value if there is no active promotion of the information or a campaign to raise awareness. Until such a time when there is a national campaign that is visible in practice, nurses must face this issue with minimal support.

Conclusion

From the literature reviewed there are a number of barriers to engagement with global warming and environmental sustainability. There appears to be widespread inaction that is disproportionate to the size and potential influence that nurses could have on environmental sustainability. There is a lack of global thinking and a lack of appreciation for the interconnectedness of local actions and global consequences. There is disconnect between the values exhibited at home and at work, with situational constraints such as time, energy and resources preventing nurses from being ambassadors for environmentally sustainable health care. There are also established social norms and professional paradigms that are blocking the adoption of new ways of thinking and working. Despite the overwhelming evidence of global warming and potent messages urging mitigation, there is little acknowledgement of the importance of this topic within the field of nursing. Further research is essential to appreciate the challenges, barriers and practicalities of creating a more sustainable health care. **BJN**

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CPD reflective questions

- Have you thought about your own carbon footprint at work? Can you think of small steps to becoming more sustainable such as reducing waste, reusing where possible and recycling?
- Sustainable health care is everyone's responsibility, what can you do to help? What barriers do you face?
- Does your hospital or trust have sustainable policies in place? How are these disseminated and who do you speak to with queries or suggestions?